SERVICE MANUAL

ST-64/ST64L

marantz

model ST-64/ST-64L

Stereophonic Tuner

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2. Complete part numbers and quanties required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
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Should you require any other technical support, do not hesitate to contact the Technical Department of
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B-1050 Brussels
Belgium
Telephone: (02) 6407830 (10 l)
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Fax.: (02) 649.29.20

PARTS ORDERING

Parts may be ordered at the following addresses:

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HORNYPHON
Vertriebsgesellschaft GmbH
Wienerbergstrasse 1
A 1101 Wien
Austria
Telex: 132.332

AUSTRALIA
MARANTZ AUSTRALIA
PTY., Ltd.
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Brookvale, NSW 2100
Australia
Telex: 24121

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SVD DIVISION MARANTZ
Industrialaan 1
1720 Groot-Bijgaarden
Belgium
Telex: 24466

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MARANTZ
DIVISION OF PHILIPS S.A.
AV. Santa Maria, 0760
Casilla 2687
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Telex: 240.239

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Postbox 1919
DK-2300 København S
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Telex: 31201

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MARANTZ IRELAND Ltd.
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Glonkeagh
Dublin 4
Telex: 25200

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00100 Helsinki
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Telex: 611651

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Germany
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THE NETHERLANDS
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The Netherlands
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Sagamihara-shi, Kanagawa
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Fahd al Saleem Street
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Safat-Kuwait
Telex: 22694

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Riyadh 11432
Saudi Arabia
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MARANTZ
DIVISION OF PHILIPS S.A.
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Johannesburg
Telex: 483.456

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PHONO S.A.
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Badalona (Barcelona)
Spain
Telex: 59355

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MARANTZ
DIVISION OF PHILIPS
Försäljning AB
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S-115 84 Stockholm
Sweden
Telex: 14060

SWITZERLAND
DYNAVOX ELECTRONICS
Route de Villars 105
1701 Fribourg
Switzerland
Telex: 942377

TURKEY
DOGRUOL Ltd.
I.M.C.
6 Blok N°6310
Unkapani
Istanbul
Turkey
Telex: 22085

MALTA
CACHIA & GALEA
Republic Street, 68D
Valetta
Telex: 1682

U.S.A.
MARANTZ COMPANY, Inc.
National Service Department
P.O.Box 577
Chatsworth, CA 91311
U.S.A.

All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please, contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at abovementioned address.

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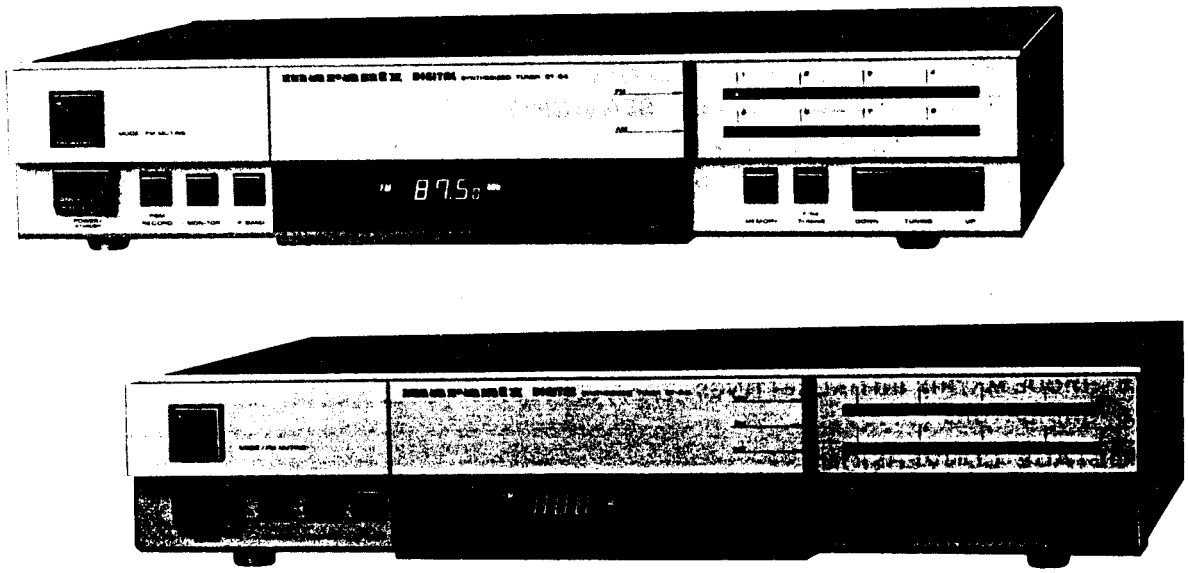
MODEL ST-64/ST-64L STEREOPHONIC TUNER



INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for Marantz Model ST-64/ST-64L Stereophonic Tuner.

Servicing information and voltage data included in this manual are intended for use by the knowledgeable and experienced technician only. All instructions should be read carefully. No attempt should be made to proceed without a good understanding of the operation of the Tuner.

The parts list furnishes information by which replacement parts may be ordered from the Marantz Company. A simple description is included for parts which can usually be obtained through local suppliers.

1. P.W. BOARDS

As can be seen from the circuit diagram the chassis of Model ST-64/ST-64L consists of the following units. Each unit mounted on a printed circuit board is described within the square enclosed by a bold dotted line on the circuit diagram.

1. Tuner . . . . . mounted on P.W. Board P100
2. Display . . . . . mounted on P.W. Board P900
3. Mode Lamp . . . . . mounted on P.W. Board PR00
4. Power/Mode . . . . . mounted on P.W. Board PS00
5. Preset Switch . . . . . mounted on P.W. Board PT00
6. IF Band . . . . . mounted on P.W. Board PU00

2. TEST EQUIPMENT REQUIRED FOR SERVICING

Item	Use
AM Signal Generator	Signal source for AM alignment
Test Loop	Use with AM signal generator
FM Signal Generator	Signal source for FM alignment
MPX Signal Generator	Stereo separation alignment and trouble shooting
Distortion Analyzer	Distortion measurements
Audio Oscillator	Sinewave and squarewave signal source
AC VTVM	Voltage measurements (AC)
Oscilloscope	Waveform analysis and trouble shooting and ASO alignment
Frequency Counter	MPX oscillator adjustment (VCO)
Circuit Tester	Trouble shooting
DC VTVM	Voltage measurements (DC)
AC Wattmeter	Monitors primary power to tuner
Line Voltmeter	Monitors potential of primary power to tuner
Variable Autotransformer (0 ~ 140V AC, 10A)	Adjusts level of primary power to tuner

3. TUNER ALIGNMENT PROCEDURES

A dummy resistor of 47 kohms must be connected across the tuner output terminals before alignment.

FM Alignment Procedures

(Function switch in the "FM" position, MODE/FM MUTING Switch in the MONAURAL/MUTING OFF position.)

1. FM RF Alignment (IF BAND switch in the "WIDE" position.)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set the Digital Readout Frequency	Adjust:
1	FM signal generator to FM antenna terminal (300 ohm) through matching network Set the SG RF output level so that some noise can be observed on the upper and lower side of the output waveform.	98.00 MHz	VTVM to L or R chnnel output (J102)	98.00 MHz	FRONT END IFT (L9) for maximum output and minimum distortion.
2	FM signal generator 1 mV output to FM antenna terminal (300 ohm) through matching network Modulation Level IHF 75 kHz DEV. DIN 40 kHz DEV.	98.00 MHz	"O" center meter or DC current meter in 100 μA range between (J100 1, 2)	98.00 MHz	L202 core so that the meter indicates its center or may read "O".
3	FM signal generator 1 mV output to FM antenna terminal (300 ohm) through matching network Modulation Level IHF 75 kHz DEV. DIN 40 kHz DEV.	98.00 MHz	"O" center meter or DC current meter in 100 μA range between (J200 1, 2)	98.00 MHz	L203 (Primary) core so that the meter indicates its center or may read "O".
4	FM signal generator 1 mV output to FM antenna terminal (300 ohm) through matching network.	98.00 MHz	Distortion meter to L or R channel output (J102)	98.00 MHz	L203 (Secondary) core for minimum distortion.

2. FM IF Alignment Procedures
(Function switch in the "FM" position, MODE/FM MUTING switch in the AUTO STEREO/MUTING ON position.)

IF BAND switch in the "WIDE" position.

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set the Digital Readout Frequency	Adjust:
1	FM signal generator 1 mV output modulated by MPX signal generator to FM antenna terminal (300 ohm) through matching network Modulation Level IHF 67.5kHz+9%Pilot DEV. DIN 40kHz +8% Pilot DEV.	No modulation	Frequency counter to (J300 1, 2)	98.00 MHz	R334 so that Frequency may precisely read 76,000 kHz (V.C.O)
2		Stereo left (1,000 Hz)	VTVM to left channel output (J102 L ch)		FRONT END IFT (L9) for minimum distortion
3		Stereo right (1,000 Hz)	VTVM to right channel output (J102 R ch)		

IF BAND switch in the "NARROW" position.

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set the Digital Readout Frequency	Adjust:
1	FM signal generator 1 mV output modulated by MPX signal generator to FM antenna terminal (300 ohm) through matching network Modulation Level IHF 67.5kHz+9%Pilot DEV. DIN 40kHz +8% Pilot DEV.	Stereo left (1,000 Hz)	VTVM to left channel output (J102 L ch)	98.00 MHz	L201 for minimum distortion
2		Stereo right (1,000 Hz)	VTVM to right channel output (J102 R ch)		
3	RF generator to FM antenna terminals through matching network (300 ohms, balanced) with the RF signal level set so that the signal strength LED may light 4 points at IF band switch "Wide"	98.00 MHz		98.00 MHz	IF Band switch "Narrow" R216 so that signal strength LED may light 4 points. (DT12)

3. Muting Level Alignment
(Function switch in the "FM" position, MODE/FM MUTING switch in the AUTO STEREO/MUTING ON position.)

IF BAND switch in the "WIDE" position.

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set the Digital Readout Frequency	Adjust:
1	FM signal generator 12.5 μV output to FM antenna terminal through matching network (300 ohm, balanced)	98.00 MHz	VTVM to L or R channel output (J102)	98.00 MHz	Adjust R233 until output is developed.

4. Multiplex Alignment Procedures
(Function switch in the "FM" position, MODE/FM MUTING switch in the AUTO STEREO/MUTING ON position.)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set the Digital Readout Frequency	Adjust:
1	FM signal generator 1 mV output modulated by MPX signal generator to FM antenna terminal (300 ohm) through matching network Modulation Level IHF 67.5kHz+9%Pilot DEV. DIN 40kHz +8% Pilot DEV.	Stereo left (1,000 Hz)	VTVM to right channel output (J102 R ch)	98.00 MHz	IF BAND WIDE R326 NARROW R325 for same separation in both channels.
2		Stereo right (1,000 Hz)	VTVM to left channel output (J102 L ch)		
3	Repeat steps 1 and 2.				
4	RF generator to FM antenna terminals through matching network (300 ohms, balanced) with 1 mV FM stereo signal.	Pilot only	VTVM to right and left channel output (J102)		R330 so that mimimum output should be the same in both channels

AM Alignment Procedures (Function switch in the "AM" position.)

1. AM IF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set the Digital Readout Frequency	Adjust:
1	Sweep generator to AM Antenna Terminal.	450 kHz marker	Oscilloscope to J300 (2, 3)	———	LA05 for maximum and symmetric response.

2. AM RF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set the Digital Readout Frequency	Adjust:
1	Apply the signal to the AM loop antenna from the AM signal generator using the test loop.	600 kHz	VTVM to L or R channel output (J102)	600 kHz	LA01 for maximum output.
2		1,400 kHz		1,400 kHz	CA02-1 for maximum output.
3	Repeat steps 1 and 2.				

3. LW RF Alignment (Function in the "LW" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set the Digital Readout Frequency	Adjust:
1	Apply the signal to the AM loop antenna from the RF generator using the test loop.	173 kHz	VTVM to L or R channel output (J102)	173 kHz	LA02 for maximum output.
2		272 kHz		272 kHz	CA02-2 for maximum output.
3	Repeat steps 1 and 2 as necessary to obtain maximum sensitivity.				

4. AM Signal Alignment (Function switch in the "AM" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set the Digital Readout Frequency	Adjust:
1	Apply a signal to the AM loop antenna from the RF generator via the test test loop. (5 mV/m)	1,000 kHz	———	1,000 kHz	Adjust RA23 so that 5 signal LEDs light. (DT13)

4. TEST POINT AND ALIGNMENT POINTS

P100

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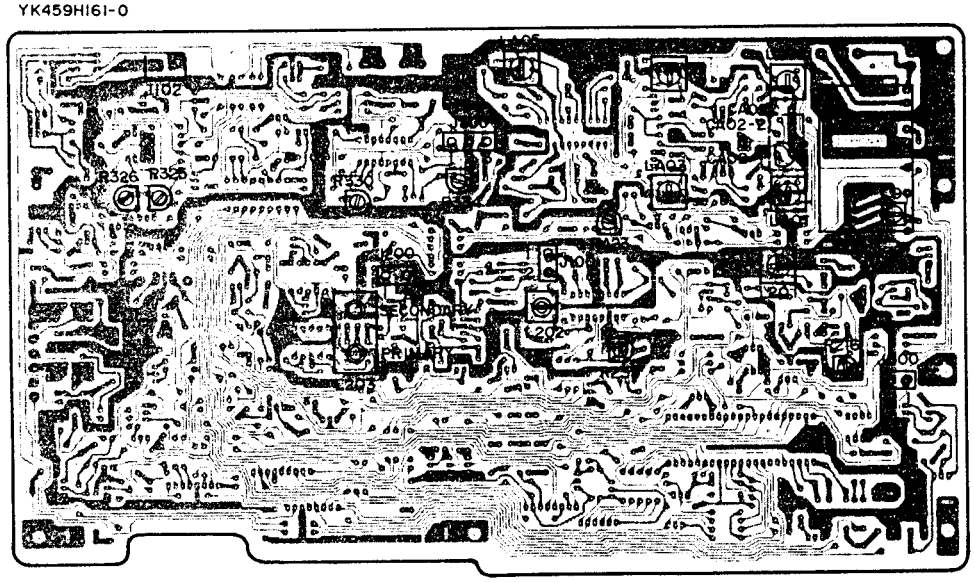

AM Alignment Procedures (Function switch in the "AM" position.)

1. AM IF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set the Digital Readout Frequency	Adjust:
1	Sweep generator to AM Antenna Terminal.	450 kHz marker	Oscilloscope to J300 (2, 3)	———	LA05 for maximum and symmetric response.

2. AM RF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set the Digital Readout Frequency	Adjust:
1	Apply the signal to the AM loop antenna from the AM signal generator using the test loop.	600 kHz	VTVM to L or R channel output (J102)	600 kHz	LA01 for maximum output.
2		1,400 kHz		1,400 kHz	CA02-1 for maximum output.
3	Repeat steps 1 and 2.				

3. LW RF Alignment (Function in the "LW" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set the Digital Readout Frequency	Adjust:
1	Apply the signal to the AM loop antenna from the RF generator using the test loop.	173 kHz	VTVM to L or R channel output (J102)	173 kHz	LA02 for maximum output.
2		272 kHz		272 kHz	CA02-2 for maximum output.
3	Repeat steps 1 and 2 as necessary to obtain maximum sensitivity.				

4. AM Signal Alignment (Function switch in the "AM" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set the Digital Readout Frequency	Adjust:
1	Apply a signal to the AM loop antenna from the RF generator via the test test loop. (5 mV/m)	1,000 kHz	———	1,000 kHz	Adjust RA23 so that 5 signal LEDs light. (DT13)

4. TEST POINT AND ALIGNMENT POINTS

P100

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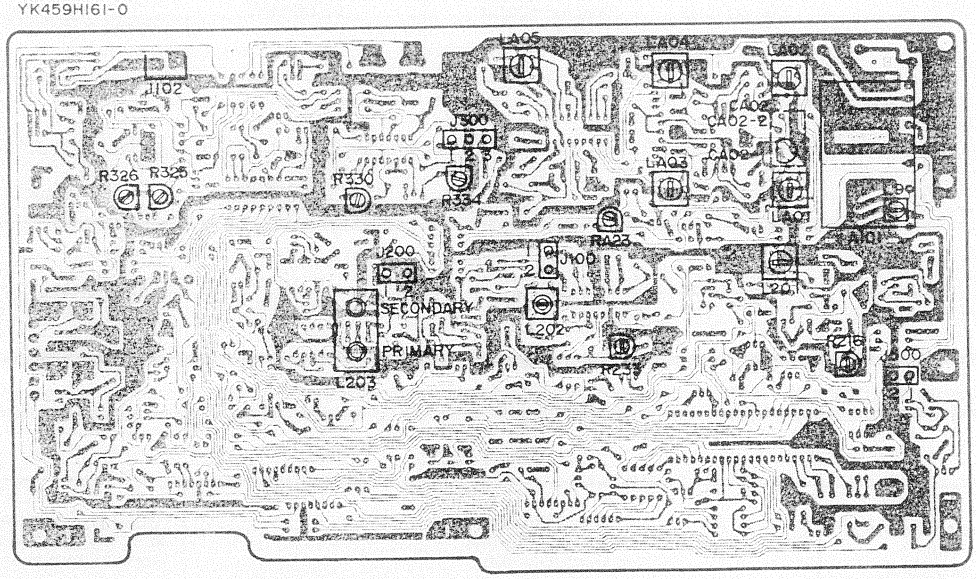


5. CIRCUIT DESCRIPTION

5.1 μPD1704C-552 (Q501)

1. SINGLE-CHIP MICROPROCESSOR CONTAINING PLL FREQUENCY SYNTHESIZER FOR μPD1704C-552 (Q501) AM/FM TUNER

- **Absolute Maximum Ratings**

Item	Symbol	Ratings	Unit
Supply voltage	V_{DD}	−0.3 ~ +6.0	V
Input voltage	V_I	−0.3 ~ +V_{DD}	V
Output voltage	V_O	−0.3 ~ +V_{DD}	V
Output absorption current	I_O	10	mA
Operating temperature	Topt	−35 ~ +75	°C
Storage temperature	Tstg	−55 ~ +125	°C
Output withstand voltage	V_{BDS}	Across Sa and Sg terminals (voltage across drain and source)	V

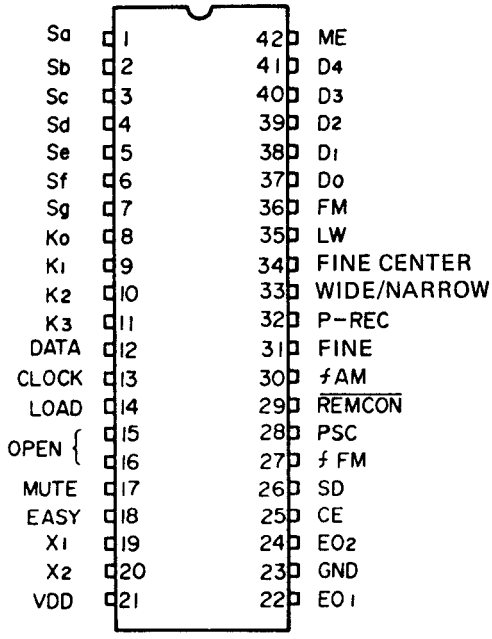
- **Recommended Operation Range**

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage	V_{DD}		4.5	5.0	5.5	V
Data (RAM) holding voltage	V_{RAM}	CE=0, CLOCK STOP instruction execution	3.0		5.5	V
Oscillation stop supply voltage	V_{DDS}			3.2	3.8	V
Output withstand voltage	V_{BDS}	Across Sa and Sg terminals (voltage across drain and source) I_{OH}=−5 μA			−30	V
Rise time of supply voltage	Trise	V_{DD}=0 → 4.5V			500	ms

- **Electrical Charateristics** (V_{DD} = +4.5 ~ +5.5V, Ta = −35 ~ +75°C)

Item	Symbol	Condition		Min.	Typ.	Max.	Unit
High-level input voltage	V_{IH1}	SD, INT terminal		0.8V_{DD}		V_{DD}	V
High-level input voltage	V_{IH2}	I/O port, CE terminal		0.7V_{DD}		V_{DD}	V
High-level input voltage	V_{IH3}	K_0 ~ K_3 terminal		0.6V_{DD}		V_{DD}	V
Low-level input voltage	V_{IL1}	I/O port, CE terminal		0		0.3V_{DD}	V
Low-level input voltage	V_{IL2}	K_0 ~ K_3, SD, INT terminal		0		0.2V_{DD}	V
High-level output voltage	V_{OH1}	EO_1, EO_2 terminal	I_{OH}=−0.5mA	4.0			V
High-level output voltage	V_{OH2}	D_1 ~ D_6, MT/D_7, I/O port	I_{OH}=−0.2mA	4.0			V
High-level output voltage	V_{OH3}	PSC terminal	I_{OH}=−0.1mA	4.0			V
High-level output voltage	V_{OH4}	Sa ~ Sg terminal	I_{OH}=−0.5mA	3.0			V
Low-level output voltage	V_{OL1}	EO_1, ED_2 terminal, I/O port	I_{OL}=0.5mA			0.5	V
Low-level output voltage	V_{OL2}	D_1 ~ D_6, MT/D_7, PSC terminal	I_{OL}=0.2mA			0.5	V
High-level input current	$+I_{IH1}$	K_0 ~ K_3 terminal	V_{IN}=V_{DD}=5.0V	25	50	100	μA
High-level input current	$+I_{IH2}$	X_1 terminal (in pull down)	V_{IN}=V_{DD}=5.0V		300		μA
Low-level input current	$-I_{IL1}$	AM, FM terminal (in pull up)	V_{IN}=0, V_{DD}=5.0V		300		μA
Output leak current	I_L	EO_1, EO_2 terminal,	Ta=25°C		10^{-3}	1	μA
Response frequency	f_{AM}	AM terminal, Vin=1.0 Vp-p (MIN.), DC cut		0.5		2.5	MHz
Response frequency	f_{FM}	FM terminal, Vin=0.8 Vp-p (MIN.), DC cut		0.5		8.8	MHz
Operating current	I_{DD1}	Excluding I/O current from I/O terminals			3		mA
Data (RAM) holding current	I_{DD2}	CE=0, CKSTP instruction execution, Ta=25°C, V_{DD}=5.0V				10	μA

- **Pin Connections**



- **Functions of Terminal**

Pin No.	Symbol	Name	Function
1 ~ 7	Sa to Sg	Segment output	Key return signal source terminal, active at the high level.
8 ~ 11	$K_0 \sim K_3$	Key return signal input	Key return signal input terminal from the remote key matrix.
12 ~ 14	DATA CLOCK LOAD		Display data output terminals connected to static display driver QR01.
17	MUTE	Mute	Muting output terminal to kill shocks and noise that are caused when PLL is out of lock.
18	EASY		The high level is outputted for about 100 ms when the band, up/down and preset memory keys are depressed (output terminal for easy operation).
19, 20	X_1, X_2	X'tal	Quartz crystal oscillator connection terminal (4.5 MHz).
21	V_{DD}	V_{DD}	Device power terminal.
22	EO_1	Error output	Phase detector charge pump output.
23	GND	Ground	Connected to the system ground.
25	CE	Chip enable	Low level in back-up, high level with the device operated in standard form.
26	SD	Station detector	Inputs auto tuning stop signal.
27	f_{FM}	FM local oscillator signal inputs	Inputs output (1/16, 1/17) into which FM local oscillator output is divided by prescaler Q502.
28	PSC	Prescaler control	Outputs division ratio change-over signal to the prescaler when the pulse swarrow method is used for division.
29	$\overline{\text{REMCON}}$		Remote-control input terminal, active at the low level.
30	f_{AM}	AM local oscillator signal inputs	Inputs MW/LW local oscillator output.
31	FINE		HIGH level when Fine Tuning can be adjusted.
32	P-REC		High level in preset record enable mode.
33	WIDE/ NARROW		This indicates whether the FM IF band is WIDE or NARROW. HIGH level at WIDE setting.
34	FINE CENTER		HIGH level when the frequency is at the center. LOW level when the frequency has been shifted by fine tuning control.
35	LW		Outputs the high level when the LW band is currently received.
36	FM		Outputs the high level when the FM band is currently received.
37 ~ 41	$D_0 \sim D_4$		Display data output terminal to dot display driver UPD6322C.
42	ME		Outputs the high level in memory enable mode.

5.2 OUTLINE OF FUNCTIONS

• Receiving Band

Three bands of FM, MW and LW can be received in Europe, and two bands of FM and AM in Japan and the U.S.A.

Destination	Type of Band	Receiving Frequency Range	Channel Space	Reference Frequency	Intermediate Frequency
Europe	MW	531 ~ 1602 kHz	9 kHz	9 kHz	450 kHz
	LW	153 ~ 281 kHz	1 kHz	1 kHz	450 kHz
	FM	87.50 ~ 108.00 MHz	50 kHz	10 kHz	10.7 MHz
U.S.A.	AM	520 ~ 1610 kHz	10 kHz	10 kHz	450 kHz
	FM	87.5 ~ 108.0 MHz	100 kHz	10 kHz	10.7 MHz
Japan	AM	531 ~ 1602 kHz	9 kHz	9 kHz	450 kHz
	FM	76.0 ~ 90.0 MHz	100 kHz	10 kHz	10.7 MHz

• Channel Selecting Function

(1) Automatic Up/Down Tuning (sawtooth wave mode)
A channel is selected at a speed of approx. 60 ms/step until high-level input is developed at pin (26) of the SD terminal.

(2) Manual Up/Down Tuning (sawtooth wave mode)
Single-finger depression of the momentary switch allows stepwise forward, and continuous depression for 0.5 second or longer runs the tape fast forward at approx. 60 ms/step.

(3) Preset Memory Access
FM . . . . . 8 channels, M1 ~ M8
LW/MW . . . 8 channels, M1 ~ M8 in random access

• Preset Memory Write

A frequency being currently received is written by depressing the preset key while the ME lamp is lit.

• Programmable Preset Recording Function

Programs can be reserved up to six channels in FM, MW and LW bands by the memory and preset keys while the PRG-REC lamp is lit.

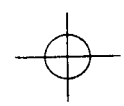
Whenever the chip enable signal changes from high to low level during operation of the PRG-REC lamp, a channel is accessed in the order of reservation. Reserved channels are displayed every second when the MONITOR key is depressed in that state.

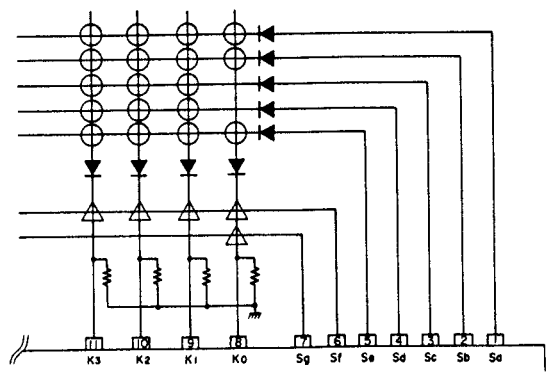
• Remote Control Function

The following actions are allowed by remote control.

(1) Preset memory access
(2) Band change-over
(3) Manual/automatic up/down channel selection

5.3 CONFIGURATION OF KEY MATRIX

	K_3	K_2	K_1	K_0	Type of Key
S_a	M1	M2	M3	M4	Momentary switch 
S_b	M5	M6	M7	M8	
S_c	UP	DOWN	MEMO		
S_d	P-REC	FINE	MONI		
S_e	MW (AM)	FM	LW	WIDE/NARROW	
S_f	BAND 2	BAND 1		N/N + 2	Initialize diode matrix
S_g				LW	



5.4 DESCRIPTION OF KEY MATRIX

- **Momentary Key**

(1) M1 ~ M8
These function as the preset memory data write-in keys, preset call-out keys, and unattended recording reservation keys.

(a) Data Write (Excluding P-REC mode)
Press any one of the M1 ~ M8 keys within approximately 5 seconds after the MEMO key is pressed (while the ME indicator is lit up). The frequency presently being received, the WIDE/NARROW data (FM only), and the FINE mode (FM only) will be written into the memory area corresponding to the key depressed.

(b) Preset Call
When any one of the M1 ~ M8 keys is pressed, the memory contents (frequency, WIDE/NARROW, FINE) corresponding to the key pressed will be called out.
Up to 8 FM presets can be programmed and called out, and 8 MW/LW presets can be programmed and called at random.

(c) Preset recording program reservation
A program can be reserved by depressing any one of the M1 ~ M8 keys within about 5 seconds after depression of the MEMO key in P-REC mode.
Programs can be reserved up to six channels in FM, MW and LW bands at random. An ordinary access to the memory is taken unless the ME lamp is lit even in P-REC mode.

(2) MEMO
The key shows preset memory write mode or preset recording program reservation enable mode. When the key is depressed, the ME lamp is lit for about 5 seconds and enable mode is set.

(3) UP/DOWN
Automatic/manual channel selection key (sawtooth wave mode).

(a) Manual
Frequency is stepped up or down (channel step) whenever the key is depressed. Continuous depression of these keys for about 0.5 second or longer allows continuous forward of the tape at about 60 ms/step.

(b) Automatic
When the key is released with continuous forward run in manual mode, frequency is automatically stepped up or down. Scanning is stopped when the high level is inputted to the SD (station detector) terminal or when these keys are redepressed.

(c) FINE TUNING
Pressing either key when the FINE mode is activated, will shift the frequency up or down in 10 kHz steps (display will not change).
Fine tuning range: Japan, America −40 kHz~+50kHz
Europe ±20 kHz
The mute output will not function when the above limits are exceeded.

(4) FINE (FM only)
Pressing this key will cause the FINE indicator to light up, indicating that fine tuning can be carried out.
The FINE mode can be cancelled by pressing the FINE key once again, pressing the UP or DOWN keys or pressing any other key excluding the ME keys.

(5) P-REC
The P-REC lamp comes on with the key depressed to display preset record enable mode. Redepression of the key clears the same mode. The UP/DOWN key does not function in P-REC mode.

(6) MONITOR
The key operates only in P-REC mode. When the key is depressed, the contents of reserved programs are displayed every second and the tape stops in the last.

(7) FM, MW (AM) and LW
When any one of these keys is depressed, a last channel of a band corresponding to the depressed key is accessed. However, the LW key is ignored if LW null is selected on the diode matrix.

(8) WIDE/NARROW (FM only)
WIDE or NARROW will be selested alternately each time this key is pressed.
The WIDE/NARROW mode can be entered into the preset memory (for FM only).

5.5 DIODE MATRIX INITIAL SETTINGS

(1) BAND 1, BAND 2
Determine the region of use.

	U.S.A.	Europe	Japan
BAND 1	0	0	1
BAND 2	0	1	1

1: Diode installed
0: Open

(2) LW
Lnstall a diode when the LW band is received.

(3) N/N+2
Determines the frequencies which can be received when SD checks are performed at 9 kHz intervals.
1: (9 x N) 153, 162, 171, ... , 270, 279 (kHz)
0: (9 x N+2) 155, 164, 171, ... , 272, 281 (kHz)

5.6 INDICATORS

(1) Indicators are static displays using the μPD6320G.

Output order	1	2 ~ 12	13 ~ 16	17 ~ 20	21 ~ 24	25 ~ 28	29 ~ 32
Display contents	Internal flag	Flags D11 to D1	BCD 10 MHz or 100 kHz	BCD 1 MHz or 10 kHz	BCD 100 kHz or 1 kHz	BCD Preset station	BCD Preset station

The internal flag is always "1" (High).

D11 '1' 0
D10 5 ..... Common to 5 and 0. ⎫ FM station interval in Europe: 50 kHz
D9 – ..... 5 ⎭
D8 D.P.
D7 kHz
D6 MHz
D5 ME
D4 MW
D3 FM
D2 LW
D1 1 ..... Most significant digit displayed

The data, clock, load signals are output from pins 12, 13, and 14, respectively.

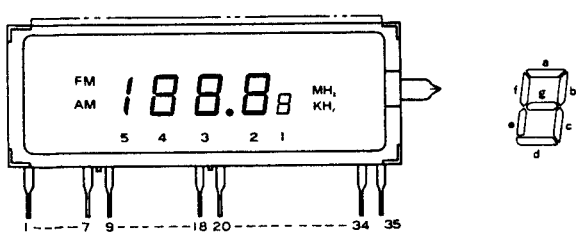
V901 (Fluorescent display tube)

Pin assignments

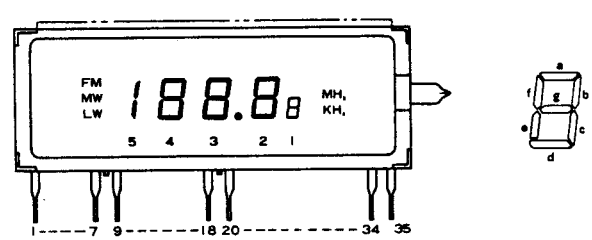
Pin number		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Electrode connected	HQ30903060	F	b_5 c_5	a_4	f_4	e_4	d_4	c_4		g_4	b_4	a_3	f_3	e_3	d_3	c_3	g_3	b_3	a_2
	HQ31002060	F	b_5 c_5	a_4	f_4	e_4	d_4	c_4		g_4	b_4	a_3	f_3	e_3	d_3	c_3	g_3	b_3	a_2

Pin number		19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Electrode connected	HQ30903060		f_2	e_2	d_2	c_2	g_2	b_2	b_1 e_1	g_1	kHz	MHz	FM Dp	AM	a_1 d_1 c_1 f_1	G	G	F
	HQ31002060		f_2	e_2	d_2	c_2	g_2	b_2	b_1 e_1	g_1	kHz	MHz	FM Dp a_1 c_1 d_1 f_1	MW	LW	G	G	F

VR01
HQ30903060
(ST-64)



VR01
HQ31002060
(ST-64L)



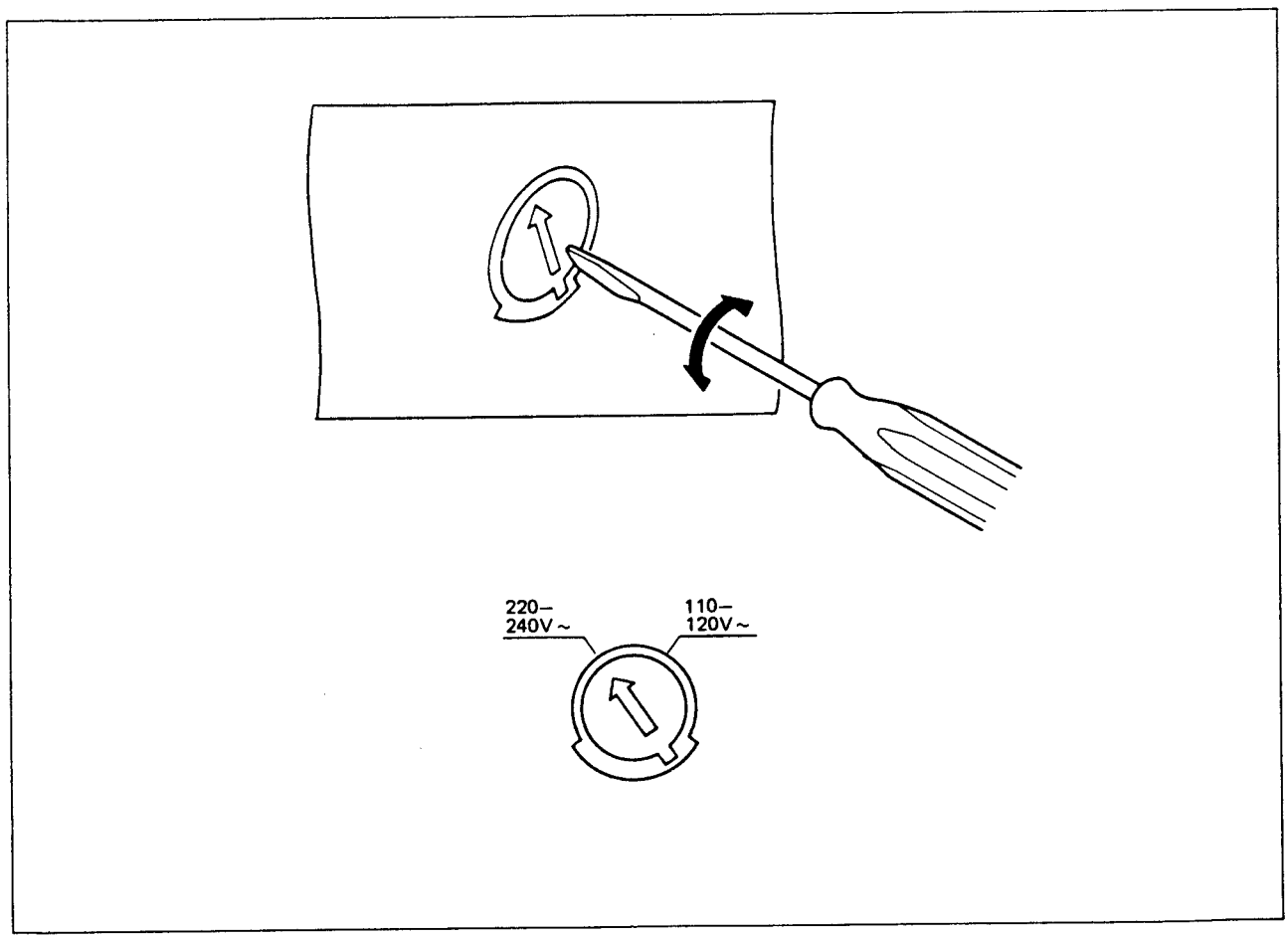
6. VOLTAGE CONVERSION

- **EUROPEAN MODEL ONLY**

To convert the unit to a different power source voltage, change the position as illustrated in the drawing below.

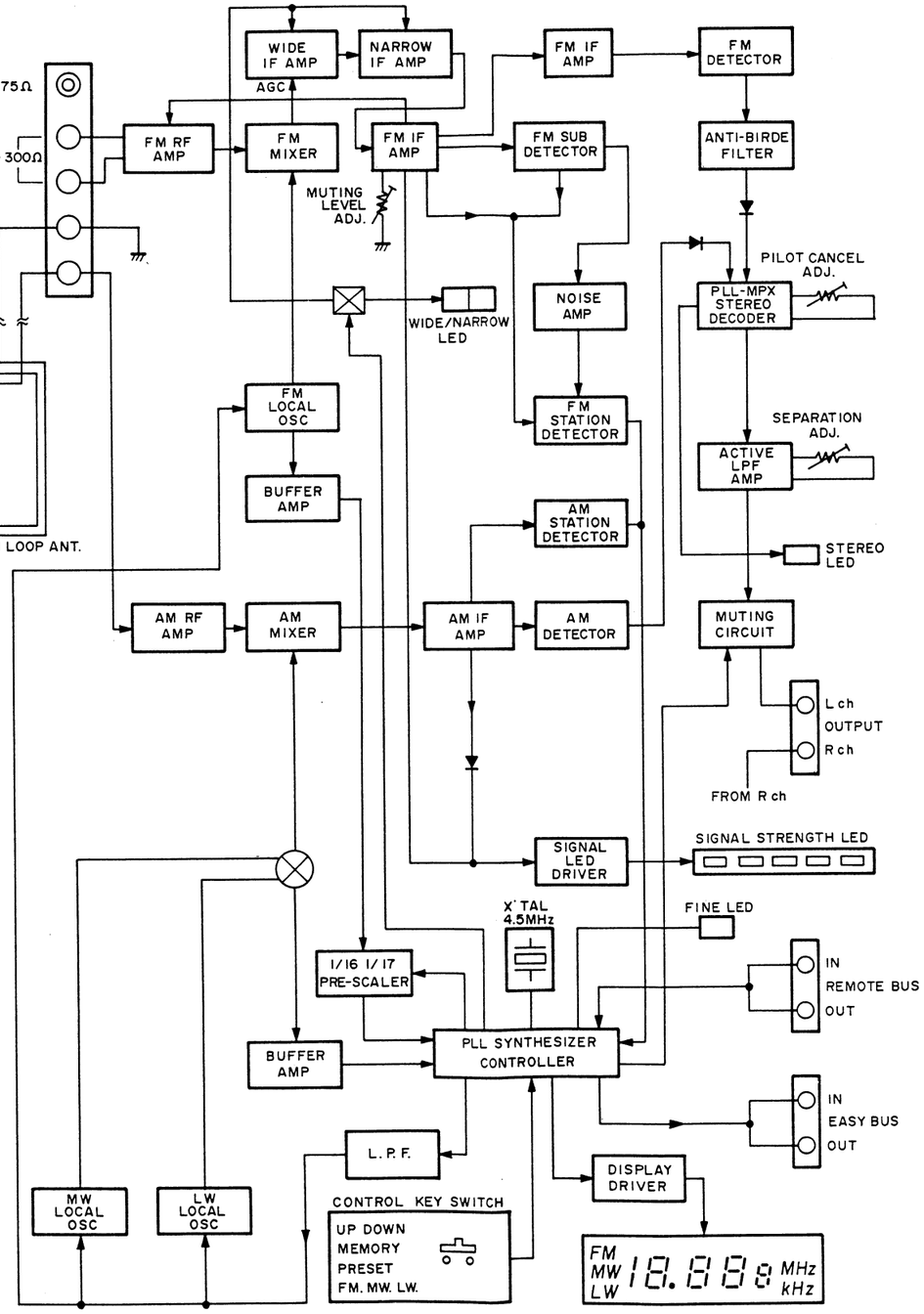
CAUTION
DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE.

Voltage Conversion Chart



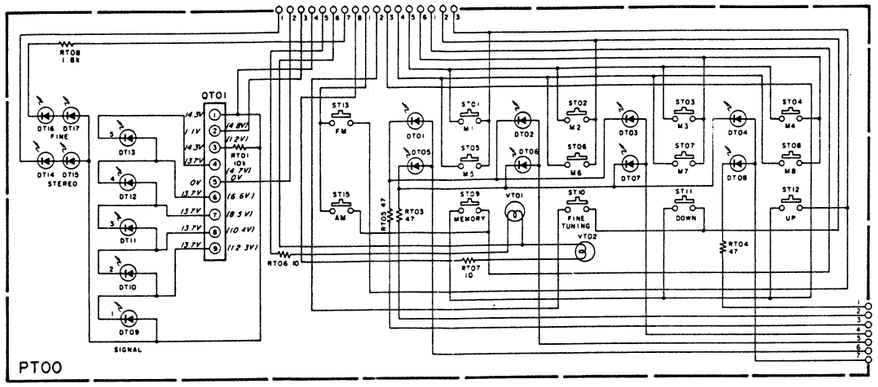
Note on safety: Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

7. BLOCK DIAGRAM

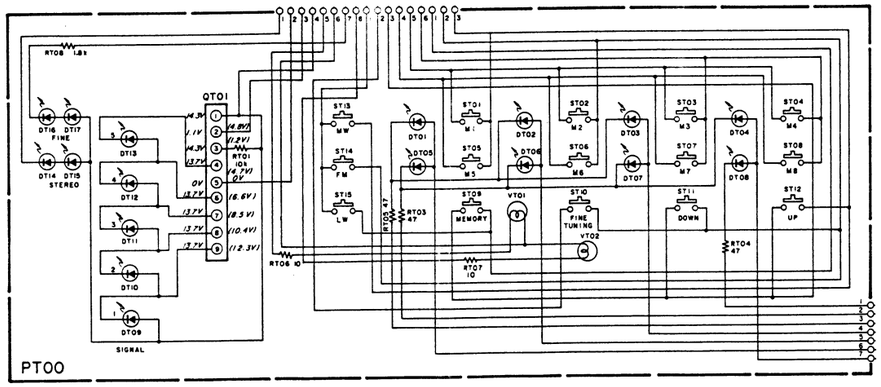


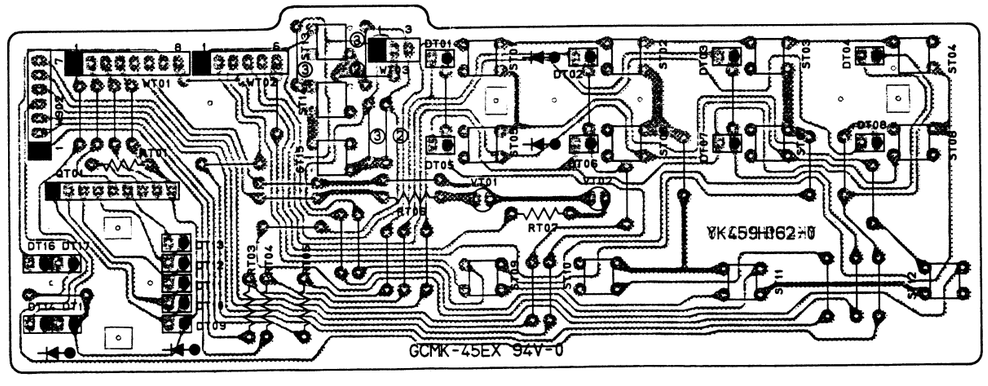
8. SCHEMATIC DIAGRAM AND COMPONENT LOCATIONS

8.1 Preset Switch Assembly (PT00) Schematic Diagram and Component Locations (Model ST-64)

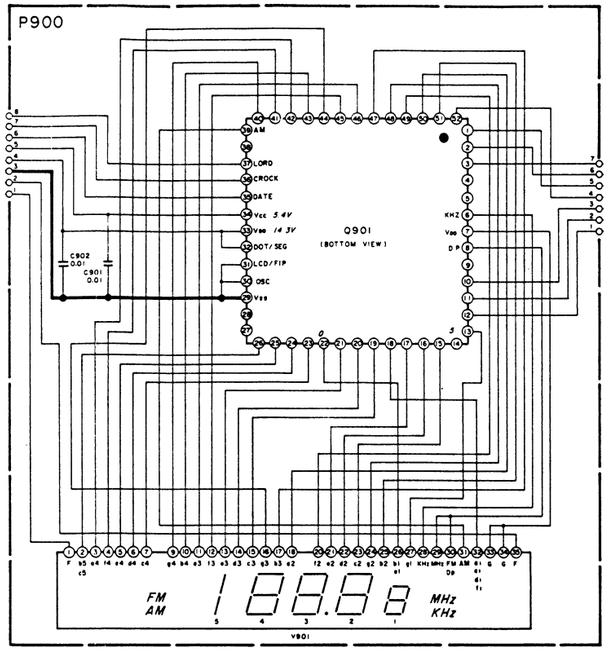


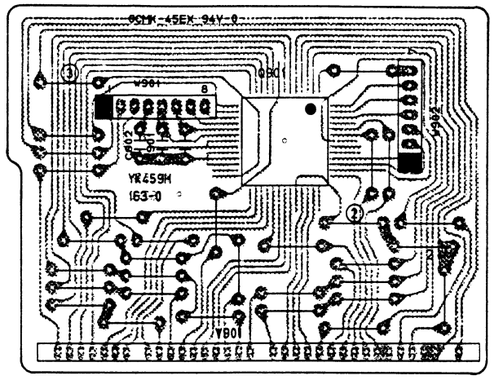
(Model ST-64L)



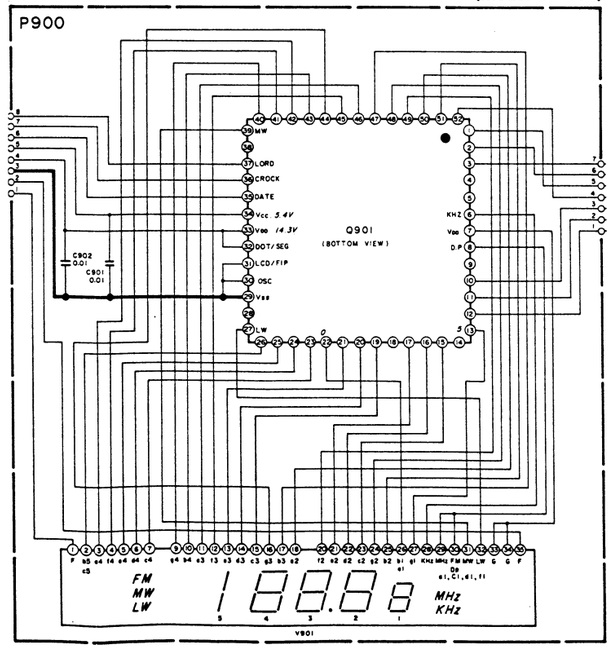


8.2 Display Assembly (P900) Schematic Diagram and Component Locations (Model ST-64)

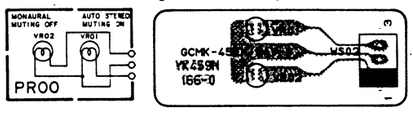




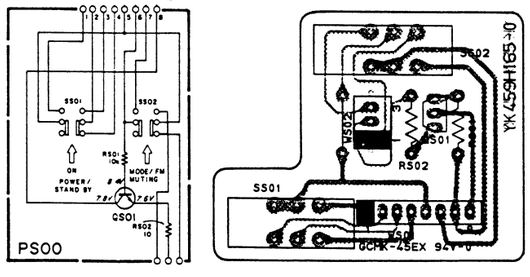
(Model ST-64L)



8.3 Mode Lamp Assembly (PR00) Schematic Diagram and Component Locations

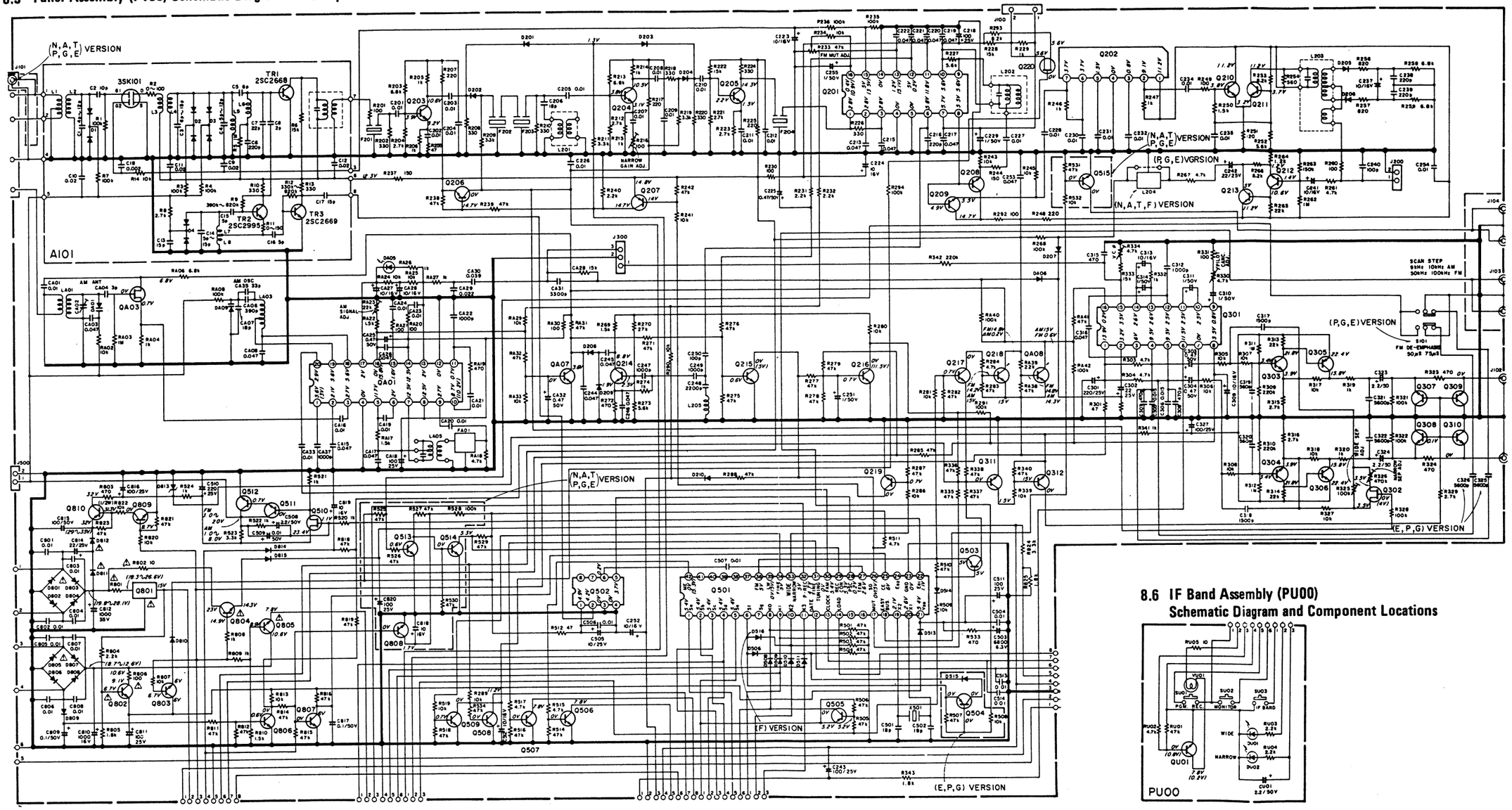


8.4 Power/Mode Assembly (PS00) Schematic Diagram and Component Locations

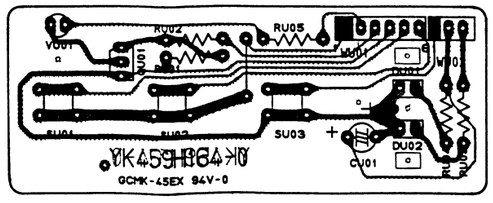


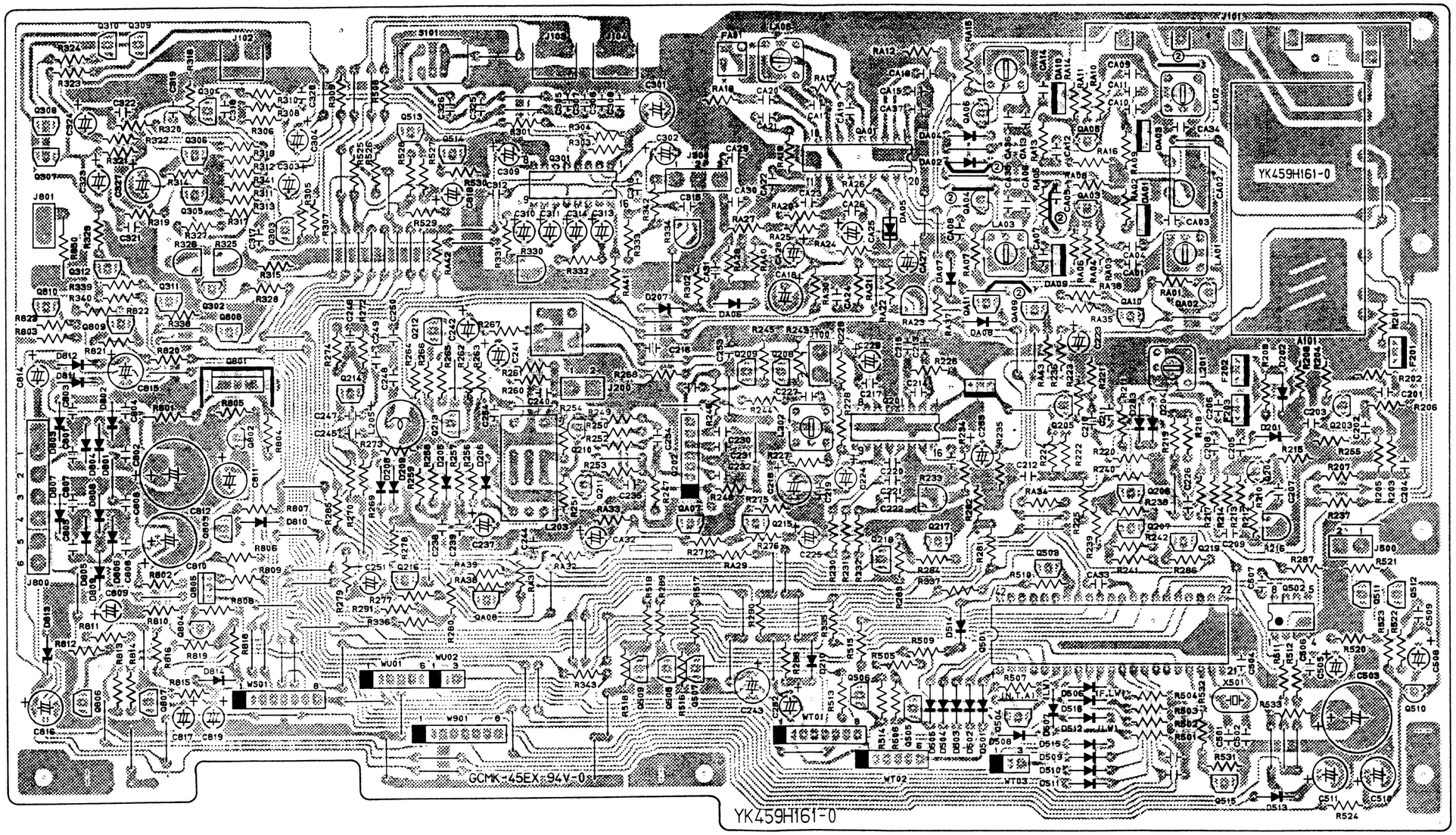
8.5 Tuner Assembly (P100) Schematic Diagram and Component Locations

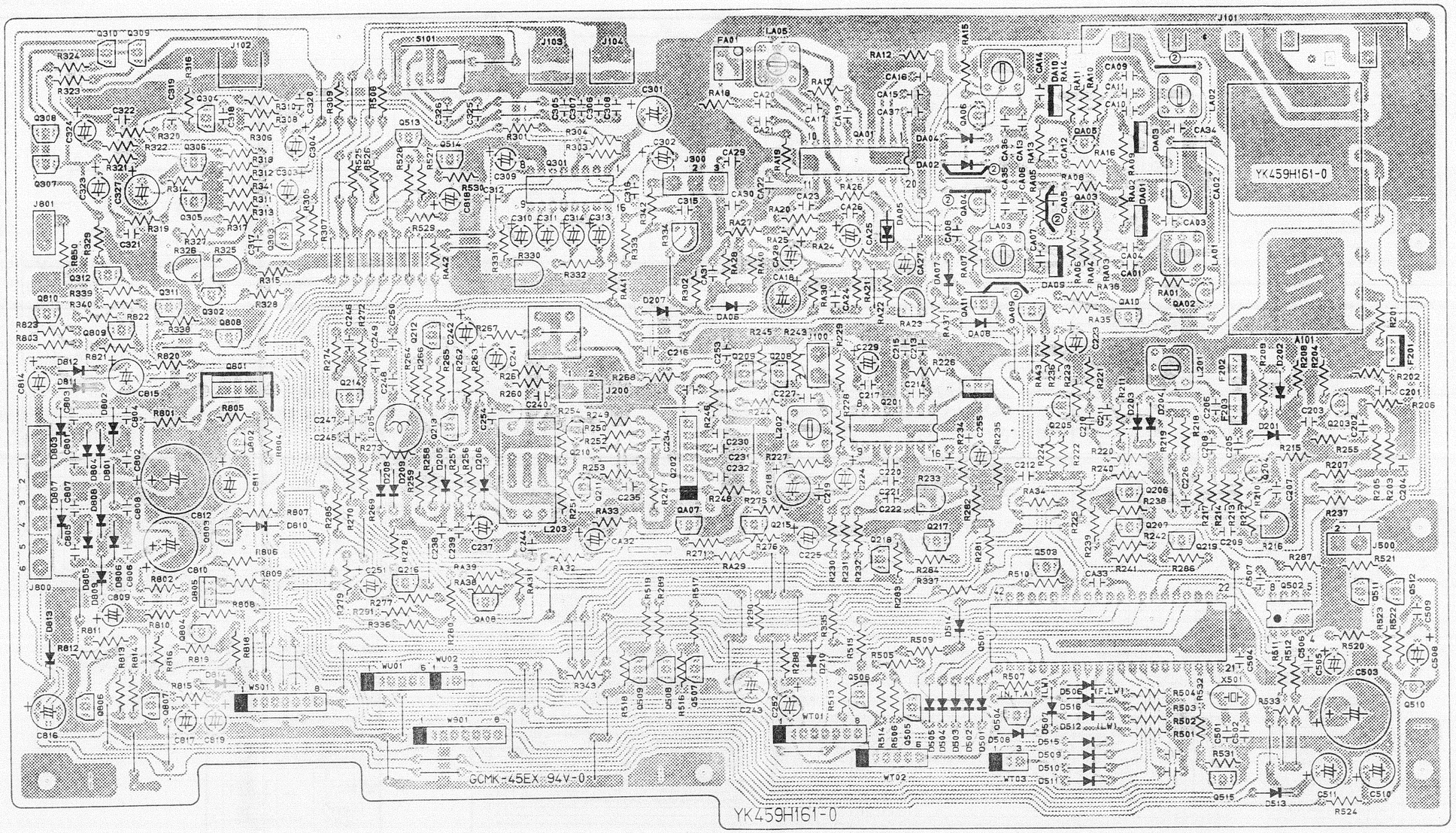
(Model ST-64)

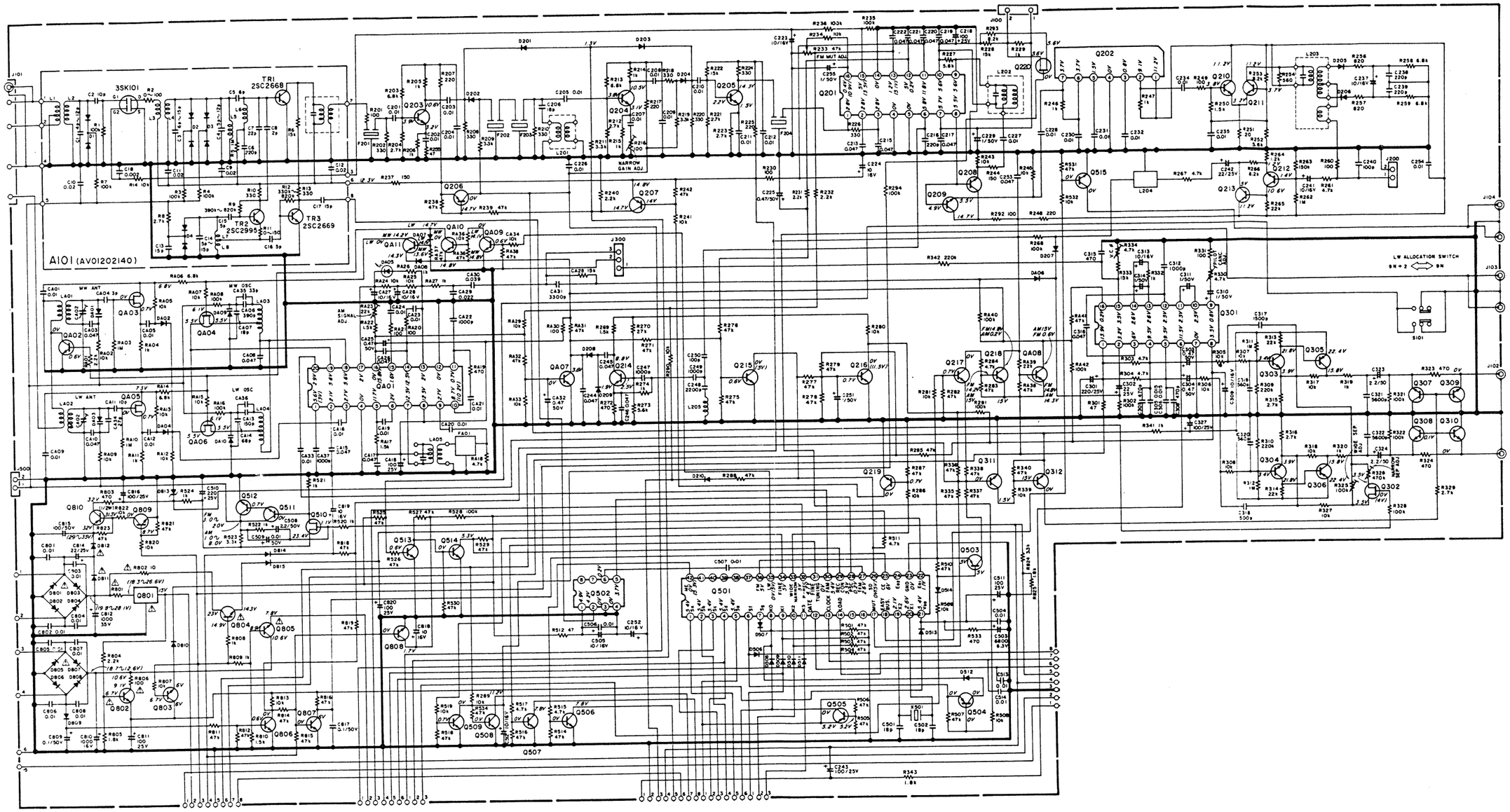


8.6 IF Band Assembly (PU00)
Schematic Diagram and Component Locations




YK459H161-0
GCMK-45EX-94V-0
YK459H161-0


YK459H161-0
GCMK-45EX-94V-0
YK459H161-0


A101 (AV01202140)
3SK101
TR1 2SC2668
TR2 2SC2995
TR3 2SC2669
LW ALLOCATION SWITCH
8N+2 ⟺ 8N
NARROW GAIN ADJ.
FM MUT ADJ.
AM SIGNAL ADJ.
MW ANT
MW OSC
LW ANT
LW OSC
Q202
Q210
Q211
Q212
Q213
Q208
Q209
Q0515
Q220
Q201
Q203
Q204
Q205
Q206
Q207
Q301
Q305
Q303
Q307
Q309
Q308
Q310
Q304
Q306
Q302
Q501
Q502
Q503
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Q803
Q804
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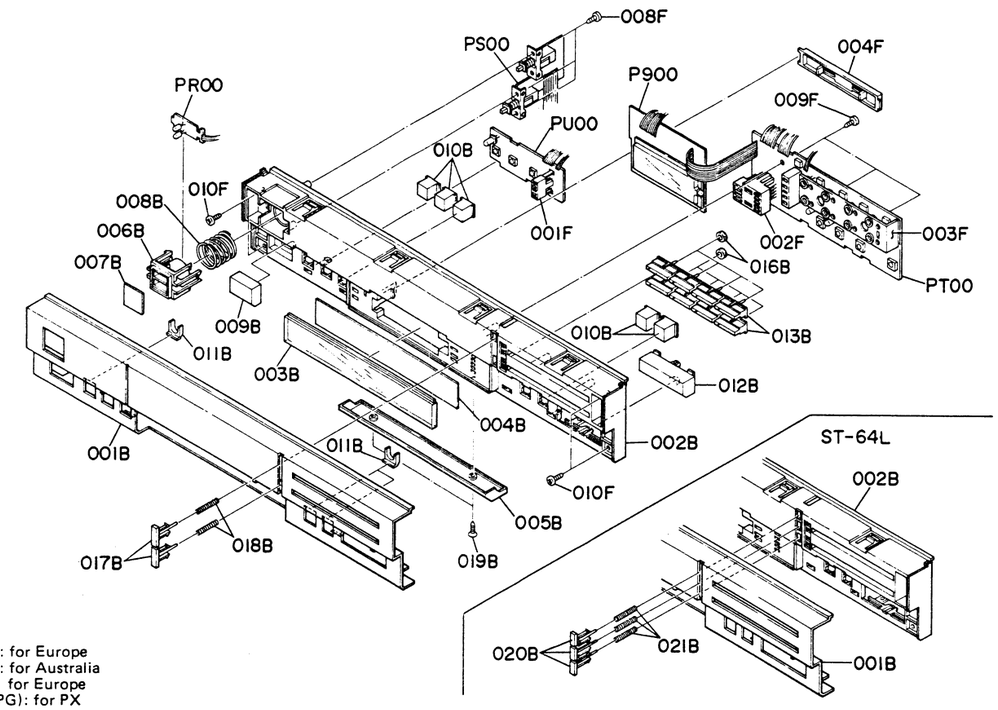
Q807
Q808
Q809
Q810
Q215
Q216
Q217
Q218
Q219
Q311
Q312
Q0208
Q214
QA01
QA02
QA03
QA04
QA05
QA06
QA07
QA08
QA09
QA10
QA11

9. EXPLODED VIEW AND PARTS LIST

● [P01-99] Front Panel and Chassis

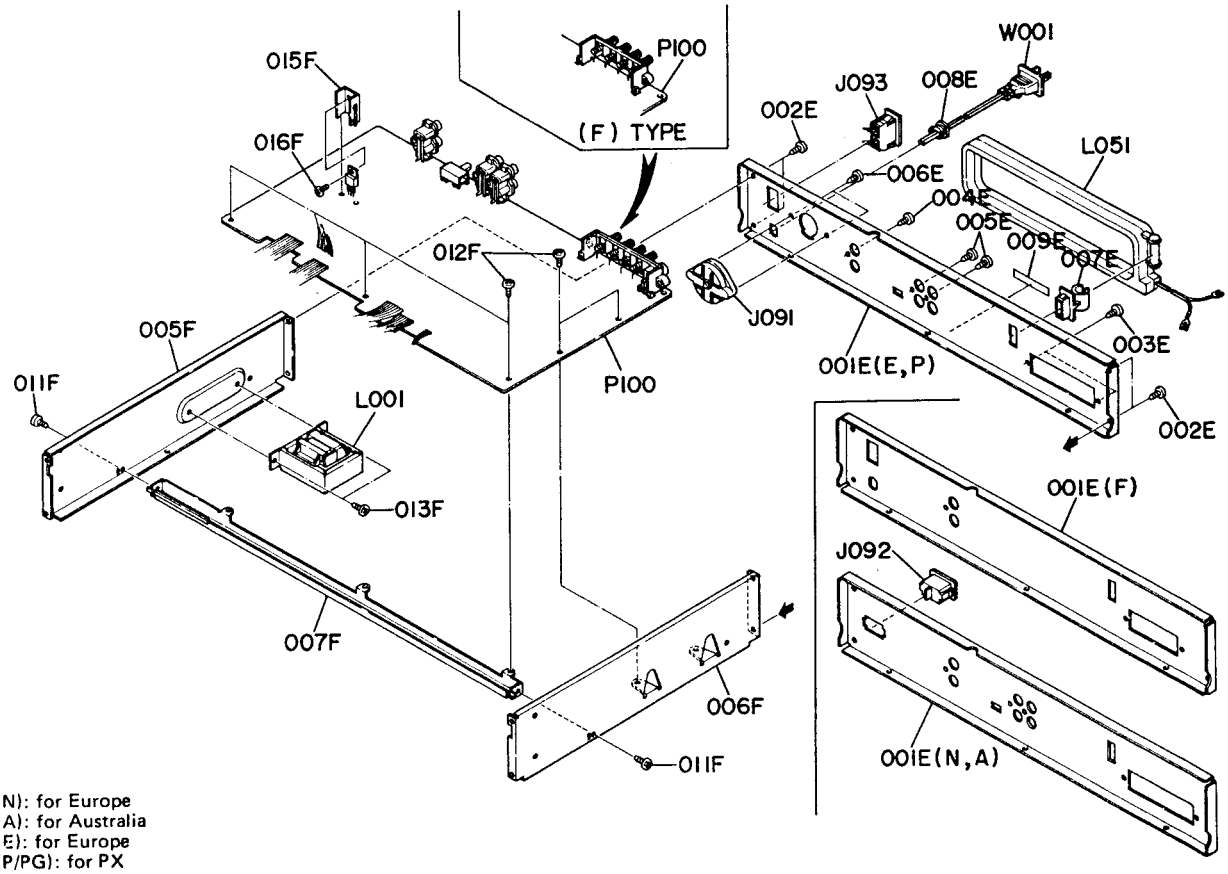


●(N): for Europe
●(A): for Australia
●(E) for Europe
●(P/PG): for PX
●(F): for Japan

REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
001B	1	1	1	1		459H248010	Panel, Front; Gold (ST-64)
001B	1		1			459H248110	Panel, Front; Black (ST-64)
001B	1					460H248010	Panel, Front; Gold (ST-64L)
001B	1					460H248110	Panel, Front; Black (ST-64L)
001B					1	459H248120	Panel, Front; Black
002B	1	1	1	1		459H105010	Chassis, Front; Gold (ST-64)
002B	1		1		1	459H105110	Chassis, Front; Black (ST-64)
002B	1					460H105010	Chassis, Front; Gold (ST-64L)
002B	1					460H105110	Chassis, Front; Black (ST-64L)
003B	1	1	1	1	1	459H158010	Window
004B	1	1	1	1	1	459H303010	Mask, Digitron
005B	1	1	1	1		459H053010	Cover, Gold
005B	1		1		1	459H053110	Cover, Black
006B	1	1	1	1		459H270010	Button, Mode; Gold
006B	1		1		1	459H270110	Button, Mode; Black
007B	1	1	1	1		459H151010	Introducer, Mode; Gold
007B	1		1		1	459H151110	Introducer, Mode; Black
008B	1	1	1	1	1	444H115110	Spring, Mode Switch
009B	1	1	1	1		242H270010	Button, Power; Gold
009B	1		1		1	242H270110	Button, Power; Black

REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
010B	5	5	5	5		448H270010	Button, Gold
010B	5		5		5	448H270110	Button, Black
011B	3	3	3	3	3	459H355010	Lens
012B	1	1	1	1		459H270020	Button, Tuning; Gold
012B	1		1		1	459H270120	Button, Tuning; Black
013B	8	8	8	8		459H270510	Button Assembly, Preset; Gold
013B	8		8		8	459H270530	Button Assembly, Preset; Black
016B	8	8	8	8	8	459H056010	Buffer, Preset Button
017B	2	2	2	2	2	459H270040	Button, FM/AM
018B	2	2	2	2	2	459H115010	Spring, FM/AM Button
019B	2	2	2	2		51500310B0	F.H. Taptite Screw F3 x 10
019B	2		2		2	51500310U0	F.H. Taptite Screw F3 x 10
020B	3					460H270010	Button, MW/LW; Gold (ST-64L)
020B	3					460H270010	Button, MW/LW; Black (ST-64L)
021B	3					460H115010	Spring (ST-64L)
001F	1	1	1	1	1	459H271010	Holder, LED
002F	1	1	1	1	1	459H271020	Holder, LED
003F	1	1	1	1	1	459H271030	Holder, LED
004F	1	1	1	1	1	431H258010	Hook, Digitron
008F	2	2	2	2	2	51280308B0	B.H. Tapped Screw B3 x 8
009F	3	3	3	3	3	51280308B0	B.H. Tapped Screw B3 x 8
010F	4	4	4	4	4	51280308B0	B.H. Tapped Screw B3 x 8

● [P02-99] Rear Panel and General Parts

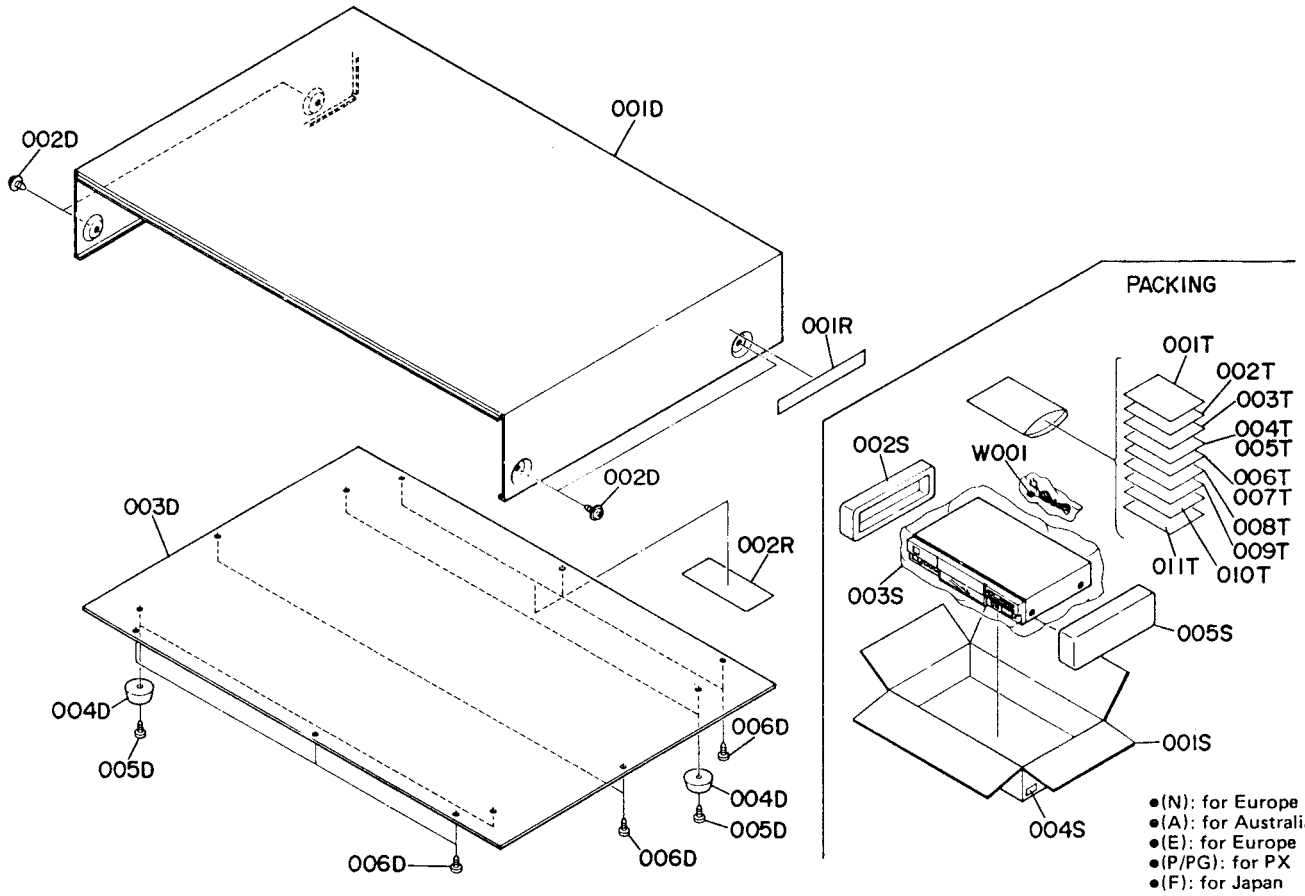


●(N): for Europe
●(A): for Australia
●(E): for Europe
●(P/PG): for PX
●(F): for Japan

REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
001E	1	1				459H250030	Panel, Rear
001E			1	1		459H250010	Panel, Rear
001E					1	459H250020	Panel, Rear
001E	1					460H250010	Panel, Rear (ST-64L)
002E	4	4	4	4	4	51280308B0	B.H. Tapped Screw B3 x 8
003E	2	2	2	2	2	51280308B0	B.H. Tapped Screw B3 x 8
004E	1	1	1	1	1	51280308B0	B.H. Tapped Screw B3 x 8
005E	2	2	2	2		51280308B0	B.H. Tapped Screw B3 x 8
006E			2	2		51280308B0	B.H. Tapped Screw B3 x 8
007E	1	1	1	1	1	417H271020	Holder, Antenna
008E			1	1	1	1455259030	Bushing, AC Cord
009E	1	1	1	1	1	2112265110	Indicator, Serial No.
005F	1	1	1	1	1	459H105020	Chassis, Left
006F	1	1	1	1	1	459H105030	Chassis, Right
007F	1	1	1	1	1	416H126030	Stay, Center
011F	2	2	2	2	2	51280308B0	B.H. Tapped Screw B3 x 8
012F	5	5	5	5	5	51280308B0	B.H. Tapped Screw B3 x 8
013F	2	2	2	2	2	51280406B0	B.H. Tapped Screw B4 x 6
015F	1	1	1	1	1	250H267020	Heatsink
016F	1	1	1	1	1	51280308B0	B.H. Tapped Screw B3 x 8

REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
⚠J091			1	1		BY05060060	Voltage Selector
⚠J092	1	1				YP04000580	Plug, AC Inlet
⚠J093			1	1		YJ04000990	Jack, AC Outlet
⚠J093					1	YJ04001110	Jack, AC Outlet
⚠L001	1	1				TS14821010	Power Transformer
⚠L001			1	1		TS14808470	Power Transformer
⚠L001					1	TS14821020	Power Transformer
L051	1	1	1	1	1	LA00035010	Antenna, Loop
⚠W001			1	1		YC01900070	A.C. Power Cord
⚠W001					1	YC01900080	A.C. Power Cord

• [P03-99] Top Cover and Packing Materials



REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
001D	1	1	1	1		228H257210	Lid, Top Cover; Gold
001D	1		1		1	228H257310	Lid, Top Cover; Black
002D	4	4	4	4	4	51260408U0	B.T. Screw B4 x 8
003D	1	1	1	1	1	459H257010	Lid, Bottom Cover
004D	4	4	4	4	4	415H057010	Leg
005D	4	4	4	4	4	51570408B0	P. Taptite Screw P4 x 8
006D	8	8	8	8	8	51280308B0	B.H. Tapped Screw B3 x 8
001R	1	1	1	1		2911861020	Label, Top Cover
002R	1	1	1	1		2911861110	Label, Bottom Cover

REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
001S	1	1			1	459H801020	Packing Case
001S			1	1		459H801010	Packing Case
001S	1					460H801010	Packing Case (ST-64L)
002S	1	1	1	1	1	459H809010	Cushion
003S	1	1	1	1	1	9090808030	Polyethylene Sheet
004S	4		4			9526019060	Serial No. Card
004S		4				9526019030	Serial No. Card
004S				3		9526019050	Serial No. Card
004S					4	9526019040	Serial No. Card
005S	1	1	1	1	1	459H809020	Cushion
001T	1	1	1	1		459H851310	User Manual
002T	1	1	1	1		459H851320	User Manual Spec
003T	1		1			459H856010	Circuit Diagram (ST-64)
003T	1					460H856010	Circuit Diagram (ST-64L)
004T		1				9631000090	Warranty Card
005T				1		416H854010	Warranty Card
006T				1		3435851210	User Manual
007T					1	459H851110	User Manual
008T					1	9631000130	Warranty Card
009T					1	128T854010	Warranty Card
010T					1	9611000050	User's Card
011T					1	9540000010	License
⚠W001	1					ZC01805010	A.C. Power Cord
⚠W001		1				ZC02006020	A.C. Power Cord

- (N): for Europe
- (A): for Australia
- (E): for Europe
- (P/PG): for PX
- (F): for Japan

10. ELECTRICAL PARTS LIST

REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
							P100-TUNER CIRCUIT BOARD
P100	1	1	1	1	1	YK459H1610	P.W. Board, Tuner
	1	1				ZZ459H8610	P.W. Board Assembly (ST-64)
			1	1		ZZ459H7610	P.W. Board Assembly (ST-64)
	1					ZZ460H8610	P.W. Board Assembly(ST-64L)
							P100-CAPACITORS
CA01	1	1	1	1	1	DK18103310	Ceramic 0.01μF
CA02	1	1	1	1	1	CT12000090	Trimming 16pF (ST-64)
CA02	1					CT21400010	Trimming 14pFx2(ST-64L)
CA03	1	1	1	1	1	DF15473310	Film 0.047μF ±5%
CA04	1	1	1	1	1	DD10030370	Ceramic 3pF ±0.25pF
CA05	1					DK18103310	Ceramic 0.01μF (ST-64L)
CA06	1	1	1	1	1	DF15391550	Film 390pF ±5%
CA07	1	1	1	1	1	DD15180370	Ceramic 18pF ±5%
CA08	1	1	1	1	1	DK18473310	Ceramic 0.047μF
CA09	1					DK18103310	Ceramic 0.01μF (ST-64L)
CA10	1					DF15473310	Film 0.047μF ±5% (ST-64L)
CA11	1					DD11100370	Ceramic 10pF ±0.5pF (ST-64L)
CA12	1					DK18103310	Ceramic 0.01μF (ST-64L)
CA13	1					DD15151300	Ceramic 150pF ±5% (ST-64L)
CA15	1	1	1	1	1	DK18473310	Ceramic 0.047μF
CA16	1	1	1	1	1	DK18103310	Ceramic 0.01μF
CA17	1	1	1	1	1	DK18473310	Ceramic 0.047μF
CA18	1	1	1	1	1	EA10702510	Elect 100μF 25V
CA19	1	1	1	1	1	DK18103310	Ceramic 0.01μF
CA20	1	1	1	1	1	DK18103310	Ceramic 0.01μF
CA21	1	1	1	1	1	DK18103310	Ceramic 0.01μF
CA22	1	1	1	1	1	DK18102300	Ceramic 1000pF
CA23	1	1	1	1	1	DK18103310	Ceramic 0.01μF
CA24	1	1	1	1	1	DK18103310	Ceramic 0.01μF
CA25	1	1	1	1	1	EA47405010	Elect 0.47μF 50V
CA26	1	1	1	1	1	DK18473310	Ceramic 0.047μF
CA27	1	1	1	1	1	EA10601610	Elect 10μF 16V
CA28	1	1	1	1	1	EA10601610	Elect 10μF 16V
CA29	1	1	1	1	1	DF15223310	Film 0.022μF ±5%
CA30	1	1	1	1	1	DF15393310	Film 0.039μF ±5%
CA31	1	1	1	1	1	DF15332310	Film 3300pF ±5%
CA32	1	1	1	1	1	EA47405010	Elect 0.47μF 50V
CA33	1	1	1	1	1	DK18103310	Ceramic 0.01μF
CA34	1					DD15270370	Ceramic 27pF ±5% (ST-64L)
CA35	1	1	1	1	1	DD15330300	Ceramic 33pF ±5%
CA37	1	1	1	1	1	DK18102300	Ceramic 1000pF
C201	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C202	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C203	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C204	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C205	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C206	1	1	1	1	1	DD15180370	Ceramic 18pF ±5%
C207	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C208	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C209	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C210	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C211	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C212	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C213	1	1	1	1	1	DK18473310	Ceramic 0.047μF
C214	1	1	1	1	1	DK18473310	Ceramic 0.047μF
C215	1	1	1	1	1	DK18473310	Ceramic 0.047μF
C216	1	1	1	1	1	DD15221370	Ceramic 220pF ±5%
C217	1	1	1	1	1	DK18473310	Ceramic 0.047μF
C218	1	1	1	1	1	EA10701610	Elect 100μF 16V
C219	1	1	1	1	1	DK18473310	Ceramic 0.047μF
C220	1	1	1	1	1	DK18473310	Ceramic 0.047μF
C221	1	1	1	1	1	DK18473310	Ceramic 0.047μF
C222	1	1	1	1	1	DK18473310	Ceramic 0.047μF
C223	1	1	1	1	1	EA47505010	Elect 47μF 50V
C224	1	1	1	1	1	EA10602510	Elect 10μF 25V
C225	1	1	1	1	1	EA47405010	Elect 0.47μF 50V
C226	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C227	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C228	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C229	1	1	1	1	1	EA10505010	Elect 1μF 50V
C230	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C231	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C232	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C234	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C235	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C237	1	1	1	1	1	EA10601610	Elect 10μF 16V
C238	1	1	1	1	1	DD15221370	Ceramic 220pF ±5%
C239	1	1	1	1	1	DD15221370	Ceramic 220pF ±5%
C240	1	1	1	1	1	DD15101370	Ceramic 100pF ±5%
C241	1	1	1	1	1	EA10601610	Elect 10μF 16V
C242	1	1	1	1	1	EA22602510	Elect 22μF 25V
C243	1	1	1	1	1	EA10702510	Elect 100μF 25V
C244	1	1	1	1	1	DK18473310	Ceramic 0.047μF
C245	1	1	1	1	1	DK18473310	Ceramic 0.047μF
C246	1	1	1	1	1	DK18473310	Ceramic 0.047μF
C247	1	1	1	1	1	DK18102300	Ceramic 100pF
C248	1	1	1	1	1	DK18222300	Ceramic 2200pF
C249	1	1	1	1	1	DK18102300	Ceramic 1000pF
C250	1	1	1	1	1	DD15101370	Ceramic 100pF ±5%
C251	1	1	1	1	1	EA10505010	Elect 1μF 50V
C252	1	1	1	1	1	EA10602510	Elect 10μF 25V
C253	1	1	1	1	1	DK18473310	Ceramic 0.047μF
C254	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C255	1	1	1	1	1	EA10505010	Elect 1μF 50V (ST-64)
C301	1	1	1	1	1	EA22702510	Elect 220μF 25V
C302	1	1	1	1	1	EA22602510	Elect 22μF 25V
C303	1	1	1	1	1	EA47405010	Elect 0.47μF 50V
C304	1	1	1	1	1	EA47405010	Elect 0.47μF 50V
C305	1	1	1	1	1	DF15103310	Film 0.01μF ±5%
C306	1	1	1	1	1	DF15103310	Film 0.01μF ±5%
C307	1	1	1	1	1	DF15471350	Film 470pF ±5%
C308	1	1	1	1	1	DF15471350	Film 470pF ±5%
C309	1	1	1	1	1	EA10605010	Elect 10μF 50V
C310	1	1	1	1	1	EA10605010	Elect 10μF 50V
C311	1	1	1	1	1	EA10605010	Elect 10μF 50V
C312	1	1	1	1	1	DK16102300	Ceramic 1000pF ±10%
C313	1	1	1	1	1	EA10601610	Elect 10μF 16V
C314	1	1	1	1	1	EA10505010	Elect 1μF 50V
C315	1	1	1	1	1	DF15471550	Film 470pF ±5%
C316	1	1	1	1	1	DF15473310	Film 0.047μF ±5%

- (N): for Europe
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REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
C317	1	1	1	1	1	DF15152310	Film 1500pF ±5%
C318	1	1	1	1	1	DF15152310	Film 1500pF ±5%
C319	1	1	1	1	1	DD15561370	Ceramic 560pF ±5%
C320	1	1	1	1	1	DD15561370	Ceramic 560pF ±5%
C321	1	1	1	1	1	DF15562310	Film 5600pF ±5%
C322	1	1	1	1	1	DF15562310	Film 5600pF ±5%
C323	1	1	1	1	1	EA22505010	Elect 2.2μF 50V
C324	1	1	1	1	1	EA22505010	Elect 2.2μF 50V
C325			1	1		DF15562310	Film 5600pF ±5% (ST-64)
C326			1	1		DF15562310	Film 5600pF ±5% (ST-64)
C327	1	1	1	1	1	EA10702510	Elect 100μF 25V
C501	1	1	1	1	1	DD15180300	Ceramic 18pF ±5%
C502	1	1	1	1	1	DD15180300	Ceramic 18pF ±5%
C503	1	1	1	1	1	EA68800610	Elect 6800μF 6.3V
C504	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C505	1	1	1	1	1	EA10601610	Elect 10μF 16V
C506	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C507	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C508	1	1	1	1	1	EA22505010	Elect 2.2μF 50V
C509	1	1	1	1	1	DF15104310	Film 0.1μF ±5%
C510	1	1	1	1	1	EA22702510	Elect 220μF 25V
C511	1	1	1	1	1	EA10702510	Elect 100μF 25V
C512	1	1	1	1	1	EA10601610	Elect 10μF 16V
C513	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C514	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C801	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C802	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C803	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C804	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C805	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C806	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C807	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C808	1	1	1	1	1	DK18103310	Ceramic 0.01μF
C809	1	1	1	1	1	EA10405010	Elect 0.1μF 50V
C810	1	1	1	1	1	EA10801610	Elect 1000μF 16V
C811	1	1	1	1	1	EA10702510	Elect 100μF 25V
C812	1	1	1	1	1	EA10803510	Elect 1000μF 35V
C814	1	1	1	1	1	EA22602510	Elect 22μF 25V
C815	1	1	1	1	1	EA10705010	Elect 100μF 50V
C816	1	1	1	1	1	EA10702510	Elect 100μF 25V
C817	1	1	1	1	1	EA10405010	Elect 0.1μF 50V
C818	1	1	1	1		EA10602510	Elect 10μF 25V
C819	1	1	1	1	1	EA10601610	Elect 10μF 16V
C820	1	1	1	1	1	EA10702510	Elect 100μF 25V
							P100-RESISTORS (All Resistors are ±5% & ¼W)
RA01	1					GD05222140	2.2kΩ (ST-64L)
RA02	1	1	1	1	1	GD05103140	10kΩ
RA03	1	1	1	1	1	GD05105140	1MΩ
RA04	1	1	1	1	1	GD05102140	1kΩ
RA05	1					GD05103140	10kΩ (ST-64L)
RA06	1	1	1	1	1	GD05682140	6.8kΩ
RA07	1					GD05103140	10kΩ (ST-64L)
RA08	1	1	1	1	1	GD05104140	100kΩ
RA09	1					GD05103140	10kΩ (ST-64L)
RA10	1					GD05105140	1MΩ (ST-64L)

REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
RA11	1					GD05102140	1KΩ (ST-64L)
RA12	1					GD05103140	10KΩ (ST-64L)
RA13	1					GD05103140	10KΩ (ST-64L)
RA14	1					GD05682140	6.8KΩ (ST-64L)
RA15	1					GD05103140	10KΩ (ST-64L)
RA16	1					GD05104140	100KΩ (ST-64L)
RA17	1	1	1	1	1	GD05152140	1.5KΩ
RA18	1	1	1	1	1	GD05472140	4.7KΩ
RA19	1	1	1	1	1	GD05471140	470Ω
RA20	1	1	1	1	1	GD05101140	100Ω
RA21	1	1	1	1	1	GD05101140	100Ω
RA22	1	1	1	1	1	GD05152140	1.5KΩ
RA23	1	1	1	1	1	RA02230600	22KΩ, Trimming
RA24	1	1	1	1	1	GD05103140	10KΩ
RA25	1	1	1	1	1	GD05103140	10KΩ
RA26	1	1	1	1	1	GD05102140	1KΩ
RA27	1	1	1	1	1	GD05102140	1KΩ
RA28	1	1	1	1	1	GD05153140	15KΩ
RA29	1	1	1	1	1	GD05103140	10KΩ
RA30	1	1	1	1	1	GD05101140	100Ω
RA31	1	1	1	1	1	GD05473140	47KΩ
RA32	1	1	1	1	1	GD05103140	10KΩ
RA33	1	1	1	1	1	GD05103140	10KΩ
RA34	1					GD05103140	10KΩ (ST-64L)
RA35	1					GD05103140	10KΩ (ST-64L)
RA36	1					GD05473140	47KΩ (ST-64L)
RA37	1					GD05473140	47KΩ (ST-64L)
RA38	1	1	1	1	1	GD05473140	47KΩ
RA39	1	1	1	1	1	GD05223140	22KΩ
RA40	1	1	1	1	1	GD05104140	100KΩ
RA41	1	1	1	1	1	GD05473140	47KΩ
RA42	1	1	1	1	1	GD05104140	100KΩ
R201	1	1	1	1	1	GD05101140	100Ω
R202	1	1	1	1	1	GD05331140	330Ω
R203	1	1	1	1	1	GD05682140	6.8KΩ
R204	1	1	1	1	1	GD05272140	2.7KΩ
R205	1	1	1	1	1	GD05102140	1KΩ
R206	1	1	1	1	1	GD05102140	1KΩ
R207	1	1	1	1	1	GD05221140	220Ω
R208	1	1	1	1	1	GD05331140	330Ω
R209	1	1	1	1	1	GD05332140	3.3KΩ
R210	1	1	1	1	1	GD05331140	330Ω
R211	1	1	1	1	1	GD05332140	3.3KΩ
R212	1	1	1	1	1	GD05272140	2.7KΩ
R213	1	1	1	1	1	GD05682140	6.8KΩ
R214	1	1	1	1	1	GD05102140	1KΩ
R215	1	1	1	1	1	GD05102140	1KΩ
R216	1	1	1	1	1	RA01010600	100Ω, Trimming
R217	1	1	1	1	1	GD05221140	220Ω
R218	1	1	1	1	1	GD05331140	330Ω
R219	1	1	1	1	1	GD05332140	3.3KΩ
R220	1	1	1	1	1	GD05331140	330Ω
R221	1	1	1	1	1	GD05272140	2.7KΩ
R222	1	1	1	1	1	GD05153140	15KΩ
R223	1	1	1	1	1	GD05272140	2.7KΩ
R224	1	1	1	1	1	GD05331140	330Ω
R225	1	1	1	1	1	GD05221140	220Ω
R226	1	1	1	1	1	GD05331140	330Ω
R227	1	1	1	1	1	GD05562140	5.6KΩ
R228	1	1	1	1	1	GD05153140	15KΩ
R229	1	1	1	1	1	GD05102140	1KΩ
R230	1	1	1	1	1	GD05101140	100Ω

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REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
R231	1	1	1	1	1	GD05222140	2.2KΩ
R232	1	1	1	1	1	GD05222140	2.2KΩ
R233	1	1	1	1	1	RA04730600	47KΩ, Trimming
R234	1	1	1	1	1	GD05103140	10KΩ
R235	1	1	1	1	1	GD05104140	100KΩ
R236	1	1	1	1	1	GD05104140	100KΩ
R237	1	1	1	1	1	GD05151140	150Ω
R238	1	1	1	1	1	GD05473140	47KΩ
R239	1	1	1	1	1	GD05473140	47KΩ
R240	1	1	1	1	1	GD05222140	2.2KΩ
R241	1	1	1	1	1	GD05103140	10KΩ
R242	1	1	1	1	1	GD05473140	47KΩ
R243	1	1	1	1	1	GD05103140	10KΩ
R244	1	1	1	1	1	GD05151140	150Ω
R245	1	1	1	1	1	GD05103140	10KΩ
R246	1	1	1	1	1	GD05102140	1KΩ
R247	1	1	1	1	1	GD05102140	1KΩ
R248	1	1	1	1	1	GD05221140	220Ω
R249	1	1	1	1	1	GD05101140	100Ω
R250	1	1	1	1	1	GD05152140	1.5KΩ
R251	1	1	1	1	1	GD05121140	120Ω
R252	1	1	1	1	1	GD05562140	5.6KΩ
R253	1	1	1	1	1	GD05822140	8.2KΩ
R254	1	1	1	1	1	GD05561140	560Ω
R255	1	1	1	1	1	GD05470140	47Ω
R256	1	1	1	1	1	GD05821140	820Ω
R257	1	1	1	1	1	GD05821140	820Ω
R258	1	1	1	1	1	GD05682140	6.8KΩ
R259	1	1	1	1	1	GD05682140	6.8KΩ
R260	1	1	1	1	1	GD05101140	100Ω
R261	1	1	1	1	1	GD05472140	4.7KΩ
R262	1	1	1	1	1	GD05105140	1MΩ
R263	1	1	1	1	1	GD05154140	150KΩ
R264	1	1	1	1	1	GD05122140	1.2KΩ
R265	1	1	1	1	1	GD05223140	22KΩ
R266	1	1	1	1	1	GD05822140	8.2KΩ
R267	1	1	1	1	1	GD05472140	4.7KΩ
R268	1	1	1	1	1	GD05104140	100KΩ
R269	1	1	1	1	1	GD05152140	1.5KΩ
R270	1	1	1	1	1	GD05273140	27KΩ
R271	1	1	1	1	1	GD05473140	47KΩ
R272	1	1	1	1	1	GD05471140	470Ω
R273	1	1	1	1	1	GD05562140	5.6KΩ
R274	1	1	1	1	1	GD05102140	1KΩ
R275	1	1	1	1	1	GD05473140	47KΩ
R276	1	1	1	1	1	GD05473140	47KΩ
R277	1	1	1	1	1	GD05473140	47KΩ
R278	1	1	1	1	1	GD05473140	47KΩ
R279	1	1	1	1	1	GD05473140	47KΩ
R280	1	1	1	1	1	GD05103140	10KΩ
R281	1	1	1	1	1	GD05103140	10KΩ
R282	1	1	1	1	1	GD05473140	47KΩ
R283	1	1	1	1	1	GD05473140	47KΩ
R284	1	1	1	1	1	GD05472140	4.7KΩ
R285	1	1	1	1	1	GD05473140	47KΩ
R286	1	1	1	1	1	GD05103140	10KΩ
R287	1	1	1	1	1	GD05473140	47KΩ
R288	1	1	1	1	1	GD05473140	47KΩ
R289	1	1	1	1	1	GD05103140	10KΩ
R290	1	1	1	1	1	GD05103140	10KΩ
R291	1	1	1	1	1	GD05104140	100KΩ (ST-64)
R292	1	1	1	1	1	GD05101140	100Ω
R293	1	1	1	1	1	GD05822140	8.2KΩ
R294	1	1	1	1	1	GD05104140	100KΩ

REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
R301	1	1	1	1	1	GG05470140	47Ω
R302	1	1	1	1	1	GD05104140	100KΩ
R303	1	1	1	1	1	GD05472140	4.7KΩ
R304	1	1	1	1	1	GD05472140	4.7KΩ
R305	1	1	1	1	1	GD05103140	10KΩ
R306	1	1	1	1	1	GD05103140	10KΩ
R307	1	1	1	1	1	GD05103140	10KΩ
R308	1	1	1	1	1	GD05103140	10KΩ
R309	1	1	1	1	1	GD05224140	220KΩ
R310	1	1	1	1	1	GD05224140	220KΩ
R311	1	1	1	1	1	GD05105140	1MΩ
R312	1	1	1	1	1	GD05105140	1MΩ
R313	1	1	1	1	1	GD05223140	22KΩ
R314	1	1	1	1	1	GD05223140	22KΩ
R315	1	1	1	1	1	GD05272140	2.7KΩ
R316	1	1	1	1	1	GD05272140	2.7KΩ
R317	1	1	1	1	1	GD05103140	10KΩ
R318	1	1	1	1	1	GD05103140	10KΩ
R319	1	1	1	1	1	GD05102140	1KΩ
R320	1	1	1	1	1	GD05102140	1KΩ
R321	1	1	1	1	1	GD05104140	100KΩ
R322	1	1	1	1	1	GD05104140	100KΩ
R323	1	1	1	1	1	GD05471140	470Ω
R324	1	1	1	1	1	GD05471140	470Ω
R325	1	1	1	1	1	RA01040600	100KΩ, Trimming
R326	1	1	1	1	1	RA02240600	220KΩ, Trimming
R327	1	1	1	1	1	GD05103140	10KΩ
R328	1	1	1	1	1	GD05104140	100KΩ
R329	1	1	1	1	1	GD05272140	2.7KΩ
R330	1	1	1	1	1	RA04720600	4.7KΩ, Trimming
R331	1	1	1	1	1	GD05101140	100Ω
R332	1	1	1	1	1	GD05102140	1KΩ
R333	1	1	1	1	1	GD05153140	15KΩ
R334	1	1	1	1	1	RA04720600	4.7KΩ, Trimming
R335	1	1	1	1	1	GD05473140	47KΩ
R336	1	1	1	1	1	GD05473140	47KΩ
R337	1	1	1	1	1	GD05473140	47KΩ
R338	1	1	1	1	1	GD05473140	47KΩ
R339	1	1	1	1	1	GD05103140	10KΩ
R340	1	1	1	1	1	GD05473140	47KΩ
R341	1	1	1	1	1	GD05102140	1KΩ
R342	1	1	1	1	1	GD05224140	220KΩ
R343	1	1	1	1	1	GD05182140	1.8KΩ
R501	1	1	1	1	1	GD05473140	47KΩ
R502	1	1	1	1	1	GD05473140	47KΩ
R503	1	1	1	1	1	GD05473140	47KΩ
R504	1	1	1	1	1	GD05473140	47KΩ
R505	1	1	1	1	1	GD05103140	10KΩ
R506	1	1	1	1	1	GD05473140	47KΩ
R507			1	1		GD05473140	47KΩ (ST-64)
R507	1					GD05473140	47KΩ (ST-64L)
R508			1	1		GD05103140	10KΩ (ST-64)
R508	1					GD05103140	10KΩ (ST-64L)
R509	1	1	1	1	1	GD05103140	10KΩ
R510	1	1	1	1	1	GD05473140	47KΩ
R511	1	1	1	1	1	GD05472140	4.7KΩ
R512	1	1	1	1	1	GD05470140	47Ω
R513	1	1	1	1	1	GD05182140	1.8KΩ
R514	1	1	1	1	1	GD05473140	47KΩ
R515	1	1	1	1	1	GD05472140	4.7KΩ
R516	1	1	1	1	1	GD05473140	47KΩ
R517	1	1	1	1	1	GD05472140	4.7KΩ
R518	1	1	1	1	1	GD05473140	47KΩ

- (N): for Europe
- (A): for Australia
- (E): for Europe
- (P/PG): for PX
- (F): for Japan

REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
R519	1	1	1	1	1	GD05103140	10KΩ
R520	1	1	1	1	1	GD05102140	1KΩ
R521	1	1	1	1	1	GD05102140	1KΩ
R522	1	1	1	1	1	GD05102140	1KΩ
R523	1	1	1	1	1	GD05332140	3.3KΩ
R524	1	1	1	1	1	GD05102140	1KΩ
R525	1	1	1	1		GD05473140	47KΩ
R526	1	1	1	1		GD05473140	47KΩ
R527	1	1	1	1		GD05473140	47KΩ
R528	1	1	1	1		GD05104140	100KΩ
R529	1	1	1	1	1	GD05473140	47KΩ
R530	1	1	1	1		GD05473140	47KΩ
R531	1	1	1	1		GD05473140	47KΩ
R532	1	1	1	1		GD05103140	10KΩ
R533	1	1	1	1	1	GD05471140	470Ω
R534	1	1	1	1	1	GD05473140	47KΩ
⚠R801	1	1	1	1	1	NH05100120	10Ω ½W, Fusible
⚠R802	1	1	1	1	1	NH05100140	10Ω, Fusible
R803	1	1	1	1	1	GG05471140	470Ω
R804	1	1	1	1	1	GD05222140	2.2KΩ
R805	1	1	1	1	1	GD05182140	1.8KΩ
⚠R806	1	1	1	1	1	GG05101140	100Ω
R807	1	1	1	1	1	GD05103140	10KΩ
R808	1	1	1	1	1	GD05102140	1KΩ
R809	1	1	1	1	1	GD05102140	1KΩ
R810	1	1	1	1	1	GD05152140	1.5KΩ
R811	1	1	1	1	1	GD05473140	47KΩ
R812	1	1	1	1	1	GD05473140	47KΩ
R813	1	1	1	1	1	GD05103140	10KΩ
R814	1	1	1	1	1	GD05473140	47KΩ
R815	1	1	1	1	1	GD05473140	47KΩ
R816	1	1	1	1	1	GD05473140	47KΩ
R818	1	1	1	1	1	GD05473140	47KΩ
R819	1	1	1	1	1	GD05473140	47KΩ
R820	1	1	1	1	1	GD05103140	10KΩ
R821	1	1	1	1	1	GD05473140	47KΩ
R822	1	1	1	1	1	GD05103140	10KΩ
R823	1	1	1	1	1	GD05473140	47KΩ
R824	1	1	1	1	1	GD05332140	3.3KΩ
R825	1	1	1	1	1	GD05182140	1.8KΩ
							P100-SEMICONDUCTORS
DA01	1	1	1	1	1	HD40006030	Varicap SVC321SP
DA02	1					HD20001000	Diode 1S1555 (ST-64L)
DA03	1					HD40006030	Varicap SVC321SP (ST-64L)
DA04	1					HD20001000	Diode 1S1555 (ST-64L)
DA05	1	1	1	1	1	HI10044320	L.E.D. GL-9PR26
DA06	1	1	1	1	1	HD20001000	Diode 1S1555
DA07	1					HD20001000	Diode 1S1555 (ST-64L)
DA08	1					HD20001000	Diode 1S1555 (ST-64L)
DA09	1	1	1	1	1	HD40006030	Varicap SVC321SP
DA10	1					HD40006030	Varicap SVC321SP (ST-64L)
D201 ≀ D210	10	10	10	10	10	HD20001000	Diode 1S1555

REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
D501 ≀ D505	5	5	5	5	5	HD20001000	Diode 1S1555
D506					1	HD20001000	Diode 1S1555 (ST-64)
D507	1					HD20001000	Diode 1S1555 (ST-64L)
D508 ≀ D511	4	4	4	4	4	HD20001000	Diode 1S1555
D512	1					HD20001000	Diode 1S1555 (ST-64L)
D513	1	1	1	1	1	HD20001000	Diode 1S1555 (ST-64)
D513	1					HD30015020	Zener MA1240(ST-64L)
D514	1	1	1	1	1	HD20001000	Diode 1S1555
D515			1	1		HD20001000	Diode 1S1555 (ST-64)
D516					1	HD20001000	Diode 1S1555 (ST-64)
⚠D801 ≀ ⚠D809	9	9	9	9	9	HD20022030	Diode DSF10C
D810	1	1	1	1	1	HD20001000	Diode 1S1555
⚠D811	1	1	1	1	1	HD20022030	Diode DSF10C
⚠D812	1	1	1	1	1	HD20022030	Diode DSF10C
D813	1	1	1	1	1	HD30015020	Zener MA1240
D814	1	1	1	1	1	HD20001000	Diode 1S1555
D815	1	1	1	1	1		Diode
QA01	1	1	1	1	1	HC10058030	IC LA1245
QA02	1					HT406551E0	Transistor 2SD655(E) (ST-64L)
QA03	1	1	1	1	1	HF200551D0	F.E.T. 2SK55D
QA04	1					HF200300B0	F.E.T. 2SK30A(Y) (ST-64L)
QA05	1					HF200551D0	F.E.T. 2SK55D(ST-64L)
QA06	1					HF200300B0	F.E.T. 2SK30A(Y) (ST-64L)
QA07	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
QA08	1	1	1	1	1	HT109332B0	Transistor 2SA933SP(R,S)
QA09	1					HT317402F0	Transistor 2SC1740S(R,S) (ST-64L)
QA10	1					HT109332B0	Transistor 2SA933SP(R,S) (ST-64L)
QA11	1					HT109332B0	Transistor 2SA933SP(R,S) (ST-64L)
Q201	1	1	1	1	1	HC10028030	IC LA1231
Q202	1	1	1	1	1	HC10017060	IC μPC1163H
Q203	1	1	1	1	1	HT310471C0	Transistor 2SC1047C
Q204	1	1	1	1	1	HT310471C0	Transistor 2SC1047C
Q205	1	1	1	1	1	HT310471C0	Transistor 2SC1047C
Q206	1	1	1	1	1	HT109332B0	Transistor 2SA933SP(R,S)
Q207	1	1	1	1	1	HT109332B0	Transistor 2SA933SP(R,S)
Q208	1	1	1	1	1	HT310471C0	Transistor 2SC1047C
Q209	1	1	1	1	1	HT310471C0	Transistor 2SC1047C
Q210	1	1	1	1	1	HT310471C0	Transistor 2SC1047C
Q211	1	1	1	1	1	HT310471C0	Transistor 2SC1047C
Q212	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q213	1	1	1	1	1	HT109332B0	Transistor 2SA933SP(R,S)
Q214	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q215	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q216	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q217	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q218	1	1	1	1	1	HT109332B0	Transistor 2SA933SP(R,S)
Q219	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)

- (N): for Europe
- (A): for Australia
- (E): for Europe
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- (F): for Japan

REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
Q301	1	1	1	1	1	HC10001420	IC KB4437
Q302	1	1	1	1	1	HF200300B0	F.E.T. 2SK30A(YI)
Q303	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q304	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q305	1	1	1	1	1	HT109332B0	Transistor 2SA933P(R,S)
Q306	1	1	1	1	1	HG109332B0	Transistor 2SA933P(R,S)
Q307	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q308	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q309	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q310	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q311	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q312	1	1	1	1	1	HT109332B0	Transistor 2SA933P(R,S)
Q501	1	1	1	1	1	HC10103060	IC μPD1704-552
Q502	1	1	1	1	1	HC10030060	IC μPB553AC
Q503	1	1	1	1	1	HT109332B0	Transistor 2SA933SP(R,S)
Q504			1	1		HT109332B0	Transistor 2SA933SP(R,S) (ST-64)
Q504	1					HT109332B0	Transistor 2SA933SP(R,S) (ST-64L)
Q505	1	1	1	1	1	HT109332B0	Transistor 2SA933SP(R,S) (ST-64L)
Q506	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q507	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q508	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q509	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q510	1	1	1	1	1	HF200300B0	F.E.T. 2SK30A(Y)
Q511	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q512	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q513	1	1	1	1		HT317402F0	Transistor 2SC1740S(R,S)
Q514	1	1	1	1		HT317402F0	Transistor 2SC1740S(R,S)
Q515	1	1	1	1		HT317402F0	Transistor 2SC1740S(R,S)
⚠Q801	1	1	1	1	1	HC10077030	IC L78M15
⚠Q802	1	1	1	1	1	HT408631B0	Transistor 2SD863(E)
Q803	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
⚠Q804	1	1	1	1	1	HT408631B0	Transistor 2SD863(E)
⚠Q805	1	1	1	1	1	HT409852B0	Transistor 2SD985(L,K)
Q806	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q807	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q808	1	1	1	1		HT317402F0	Transistor 2SC1740S(R,S)
Q809	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
Q810	1	1	1	1	1	HT109332B0	Transistor 2SA933SP(R,S)
							P100-MISCELLANEOUS
A101	1	1	1	1		AV01202140	V.H.F. Tuner, FE407-A12
A101					1	AV01201060	V.H.F. Tuner, FE407-J12
FA01	1	1	1	1	1	FF10045310	Ceramic Filter, SFP450H
F201	1	1				FF11070570	Ceramic Filter, SFE10.7MS3G
F201			1	1	1	FF11070610	Ceramic Filter, SFE10.7MA8-A
F202	1	1	1	1	1	FF11070610	Ceramic Filter, SFE10.7MA8-A
F203	1	1	1	1	1	FF11070610	Ceramic Filter, SFE10,7MA8-A
F204	1	1				FF11070570	Ceramic Filter, SFE10.7MS3G
F204			1	1	1	FF11070610	Ceramic Filter, SFE10.7MA8-A

REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
J101	1	1	1	1		YT01050040	Terminal, FM Antenna; (5P)
J101					1	YT01040290	Terminal, FM Antenna; (4P)
J102	1	1	1	1	1	YT02020380	Terminal, Output; (2P)
J103	1	1	1	1		YT02020390	Terminal, Remote Cont. BUS.; (2P)
J104	1	1	1	1		YT02020400	Terminal, Easy BUS.; (2P)
LA01	1	1	1	1	1	LA10295140	Ant. Coil, AM
LA02	1					LA10295150	Ant. Coil, LW (ST-64L)
LA03	1	1	1	1	1	LO10013170	OSC Coil, MW
LA04	1					LO10013180	OSC Coil, LW (ST-64L)
LA05	1	1	1	1	1	LI10013270	I.F.T. Coil, AM
L201	1	1	1	1	1	LI10016010	I.F.T. Coil, FM
L202	1	1	1	1	1	LI10159010	I.F.T. Coil, FM DET Sub
L203	1	1	1	1	1	LI14030030	I.F.T. Coil, FM DET
L204	1	1				LS10295030	M.P.X. Coil, Anti Birde Filter
L205	1	1	1	1	1	LC24750600	Choke Coil, 4.7mH
S101			1	1		SS02020730	Slide Switch, Scan/Stop (ST-64)
X501	1	1	1	1	1	XB108001L2	Crystal, 4.5MHz
							P900-DISPLAY CIRCUIT BOARD
P900	1	1	1	1	1	YK459H1630	P.W. Board, Display
	1	1	1	1		ZZ459H8630	P.W. Board Assembly (ST-64)
	1					ZZ460H8630	P.W. Board Assembly(ST-64L)
C901	1	1	1	1	1	DK18103310	Ceramic Cap. 0.01μF
C902	1	1	1	1	1	DK18103310	Ceramic Cap. 0.01μF
Q901	1	1	1	1	1	HC10077060	IC μPD6320G
V901	1	1	1	1	1	HQ30903060	Display Unit, FIP7B8AS (ST-64)
V901	1					HQ31002060	Display Unit, FIP7A8AS (ST-64L)
W901	1	1	1	1	1	YU08200260	Jumper Lead, 8P
W902	1	1	1	1	1	YU07080260	Jumper Lead, 7P
							PR00-MODE LAMP CIRCUIT BOARD
PR00	1	1	1	1	1	YK459H1660	P.W. Board, Mode Lamp
	1	1	1	1		ZZ459H8660	P.W. Board Assembly
VR01	1	1	1	1	1	IN10080610	Lamp 50mA 8V
VR02	1	1	1	1	1	IN10080610	Lamp 50mA 8V

- (N): for Europe
- (A): for Australia
- (E): for Europe
- (P/PG): for PX
- (F): for Japan

REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
							PS00-POWER/MODE CIRCUIT BOARD
PS00	1	1	1	1	1	YK459H1650	P.W. Board, Power/Mode
	1	1	1	1		ZZ459H8650	P.W. Board Assembly
RS01	1	1	1	1	1	GD05103140	Resistor 10KΩ ±5% ¼W
RS02	1	1	1	1	1	GD05100140	Resistor 10Ω ±5% ¼W
QS01	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
SS01	1	1	1	1	1	SP02011000	Push Switch, Power
SS02	1	1	1	1	1	SP02011230	Push Switch, Mode
WS01	1	1	1	1	1	YU08200260	Jumper Lead, 8P
WS02	1	1	1	1	1	YU03080260	Jumper Lead, 3P
							PT00-PRESET SWITCH CIRCUIT BOARD
PT00	1	1	1	1	1	YK459H1620	P.W. Board, Preset Switch
	1	1	1	1		ZZ459H8620	P.W. Board Assembly (ST-64)
	1					ZZ460H8620	P.W. Board Assembly(ST-64L)
							PT00-RESISTORS (All Resistors are ±5% & ¼W)
RT01	1	1	1	1	1	GD05103140	10KΩ
RT03	1	1	1	1	1	GD05470140	47Ω
RT04	1	1	1	1	1	GD05470140	47Ω
RT05	1	1	1	1	1	GD05470140	47Ω
RT06	1	1	1	1	1	GD05100140	10Ω
RT07	1	1	1	1	1	GD05100140	10Ω
RT08	1	1	1	1	1	GD05182140	1.8KΩ
							PT00-SEMICONDUCTORS
DT01 ~ DT08	8	8	8	8	8	HI10038030	L.E.D. SLP-981C-50
DT09 ~ DT17	9	9	9	9	9	HI10044320	L.E.D. GL-9PR26
QT01	1	1	1	1	1	HC10062020	IC AN6876
							PT00-MISCELLANEOUS
ST01 ~ ST12	12	12	12	12	12	SP01010570	Push Switch
ST13	1	1	1	1	1	SP01010570	Push Switch, FM (ST-64)
ST13	1					SP01010570	Push Switch, MW (ST-64L)
ST14	1					SP01010570	Push Switch, FM (ST-64L)
ST15	1	1	1	1	1	SP01010570	Push Switch, AM (ST-64)
ST15	1					SP01010570	Push Switch, LW (ST-64L)
VT01	1	1	1	1	1	IN10080620	Lamp 50mA 8V, Memory
VT02	1	1	1	1	1	IN10080620	Lamp 50mA 8V, Fine
WT01	1	1	1	1	1	YU08200260	Jumper Lead, 8P
WT02	1	1	1	1	1	YU06200260	Jumper Lead, 6P
WT03	1	1	1	1	1	YU03200260	Jumper Lead, 3P

REF. DESIG.	Q'TY N	A	E	P/PG	F	PART NO.	DESCRIPTION
							PU00-IF BAND CIRCUIT BOARD
PU00	1	1	1	1	1	YK459H1640	P.W. Board, IF Band
	1	1	1	1		ZZ459H8640	P.W. Board Assembly
CU01	1	1	1	1	1	EA22505010	Elect Cap. 22μF 50V
RU01	1	1	1	1	1	GD05473140	Resistor 47KΩ ±5% ¼W
RU02	1	1	1	1	1	GD05472140	Resistor 4.7KΩ ±5% ¼W
RU03	1	1	1	1	1	GD05222140	Resistor 2.2KΩ ±5% ¼W
RU04	1	1	1	1	1	GD05222140	Resistor 2.2KΩ ±5% ¼W
RU05	1	1	1	1	1	GD05100140	Resistor 10Ω ±5% ¼W
DU01	1	1	1	1	1	HI10044310	L.E.D. GL-9PR26, Wide
DU02	1	1	1	1	1	HI10044320	L.E.D. GL-9PR26, Nallow
QU01	1	1	1	1	1	HT317402F0	Transistor 2SC1740S(R,S)
SU01	1	1	1	1	1	SP01010570	Push Switch, PGM. Record
SU02	1	1	1	1	1	SP01010570	Push Switch, Monitor
SU03	1	1	1	1	1	SP01010570	Push Switch, IF Band
VU01	1	1	1	1	1	IN10080620	Lamp 50mA 8V, PGM. Record
WU01	1	1	1	1	1	YU06200260	Jumper Lead, 6P
WU02	1	1	1	1	1	YU03200260	Jumper Lead, 3P

(W01-99)	Assembly and Wiring
(T01-99)	Adjustment
(X01-00)	Correction

NOTE ON SAFETY:
Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

11. TECHNICAL SPECIFICATIONS

FM TUNER SECTION

Frequency Range		87.5 ~ 108 MHz
Usable Sensitivity		
Mono (S/N 26 dB, 75 ohms)		0.7 μV
Stereo (S/N 46 dB, 75 ohms)		20 μV
Alternate Channel Selectivity 98 MHz (W/N)		40/75 dB
Image Response Rejection		80 dB
IF Rejection		110 dB
Spurious Response Rejection		95 dB
AM Suppression		60 dB
Signal-to-Noise Ratio		
Unweighted	Mono	78 dB
	Stereo	73 dB
Weighted	Mono	85 dB
	Stereo	76 dB
Pilot Signal & Subcarrier Rejection		
19 kHz		60 dB
38 kHz		65 dB
Total Harmonic Distortion		
Mono (W/N)		0.05/0.15%
Stereo (W/N)		0.08/0.3%
Frequency Response		
30 Hz ~ 15 kHz		+0.5 dB, −1.5 dB
Separation		
Stereo (W/N)		55/50 dB
Channel Balance		0.2 dB

MW TUNER SECTION

Frequency Range	531 ~ 1602 kHz
Usable Sensitivity 20 dB S/N 30% Mod., 999 kHz	350 μV/m
Selectivity 999 kHz, ±9 kHz	60 dB
Image Rejection, 999 kHz	45 dB
IF Rejection, 999 kHz	70 dB
Signal-to-Noise Ratio, 999 kHz	54 dB
Total Harmonic Distortion, 999 kHz	0.3%

LW TUNER SECTION

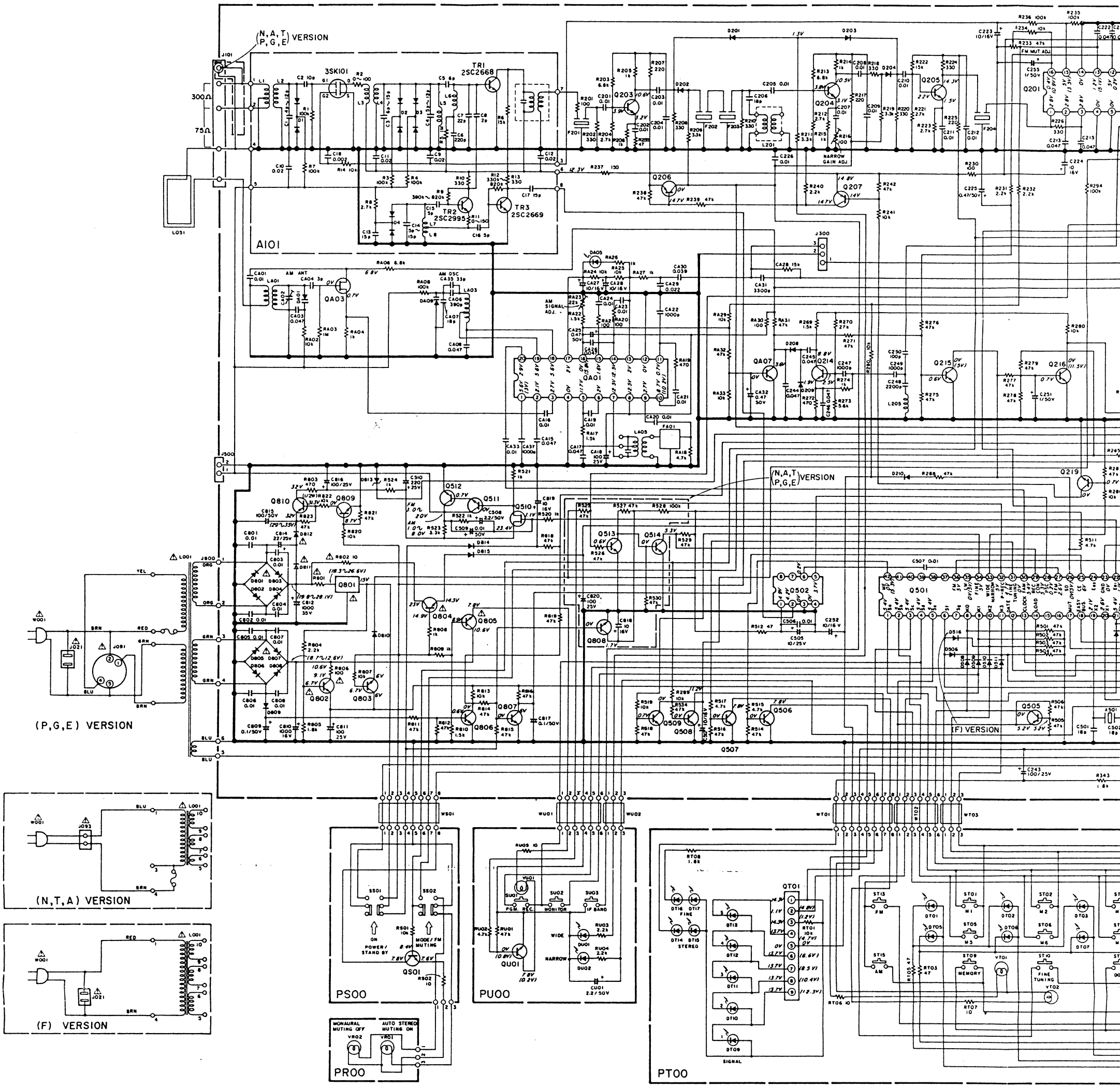
Frequency Range	153 ~ 281 kHz
Usable Sensitivity 20 dB S/N 30% Mod., 250 kHz	800 μV
Image Rejection, 250 kHz	50 dB
IF Rejection, 250 kHz	65 dB
Signal-to-Noise Ratio, 250 kHz	50 dB

GENERAL

Power Requirements	(ST-64)	110/120/220/240V AC, 50/60 Hz
	(ST-64L)	220/240V AC, 50/60 Hz
Power Consumption at Rated Output, Both Channels Operating		12W
Dimensions		
Panel Width		416 mm
Panel Height		73 mm
Depth		295 mm
Weight		
Unit Alone		3.4 kg

Specifications and appearance are subject to change for modification without notice.

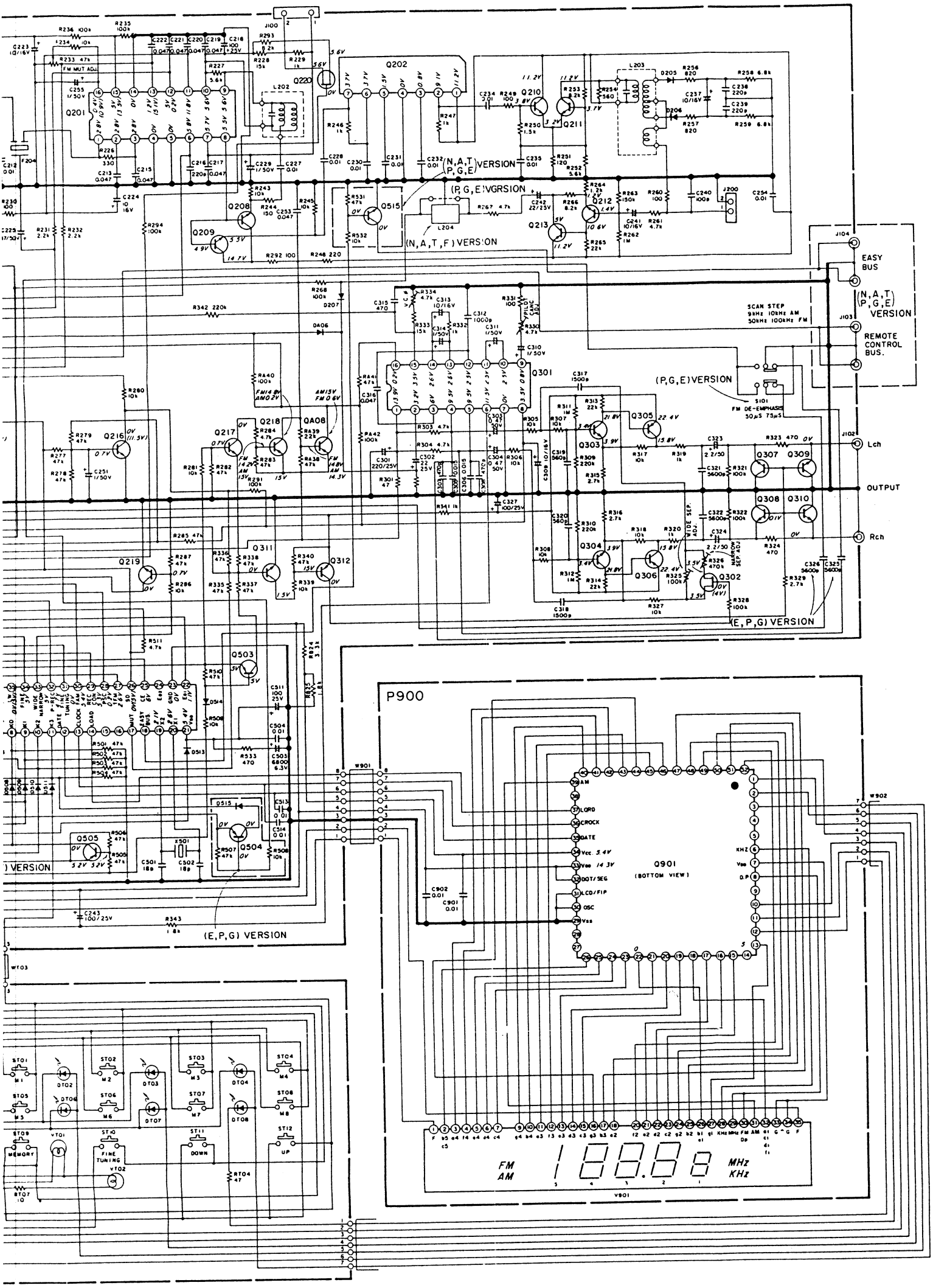
12. SCHEMATIC DIAGRAM



NOTE ON SAFETY :

Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

Model ST-64



QA01
HC10058030
LA1245

QT01
HC10062020
AN6876

Q201
HC10028030
LA1231

Q202
HC10017060
μPC1163H

Q301
HC10001420
KB4437

Q501
HC10103060
μPC1704C-552

Q502
HC10030060
μP8553AC

Q801
HC10077030
L78M15

Q901
HC10077060
μPD6320G

QA03
HF200551D0
2SK55D

Q302, Q510, Q220
HF200300B0
2SK30A (YI)

QA07, QS01, QU01, Q212
Q214～Q217, Q219, Q303
Q304, Q307～Q311, Q506
Q507～Q509, Q511～Q515
Q803, Q806～Q809
HT3I7402F0
2SC1740S (R or S)

QA08, Q206
Q207, Q213, Q218, Q305
Q306, Q312, Q503, Q504
Q505, Q810
HT1093328O
2SA933SP (R or S)

Q802, Q804
HT40863180
2SD863 (E)

Q805
HT40985280
2SD985(L,K)

DA02
DA06, D201, D202, D203
D204, D205, D206, D207
D208, D209, D210, D501
D502, D503, D504, D505
D506, , D508,
D510, D511, D512, D513
D514, D515, D516,
D810, D814
HD20001000
IS1555, IS2473, DS448
MA150, ETC.

DT01～DT08
HI10038030
SLP-981C-50

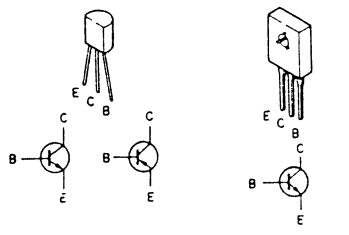
DT09～DT17, DU01, DU02
DA05
HI10044320
GL-9PR26

D801～D809, D811, D812
HD20022030
DSF10C

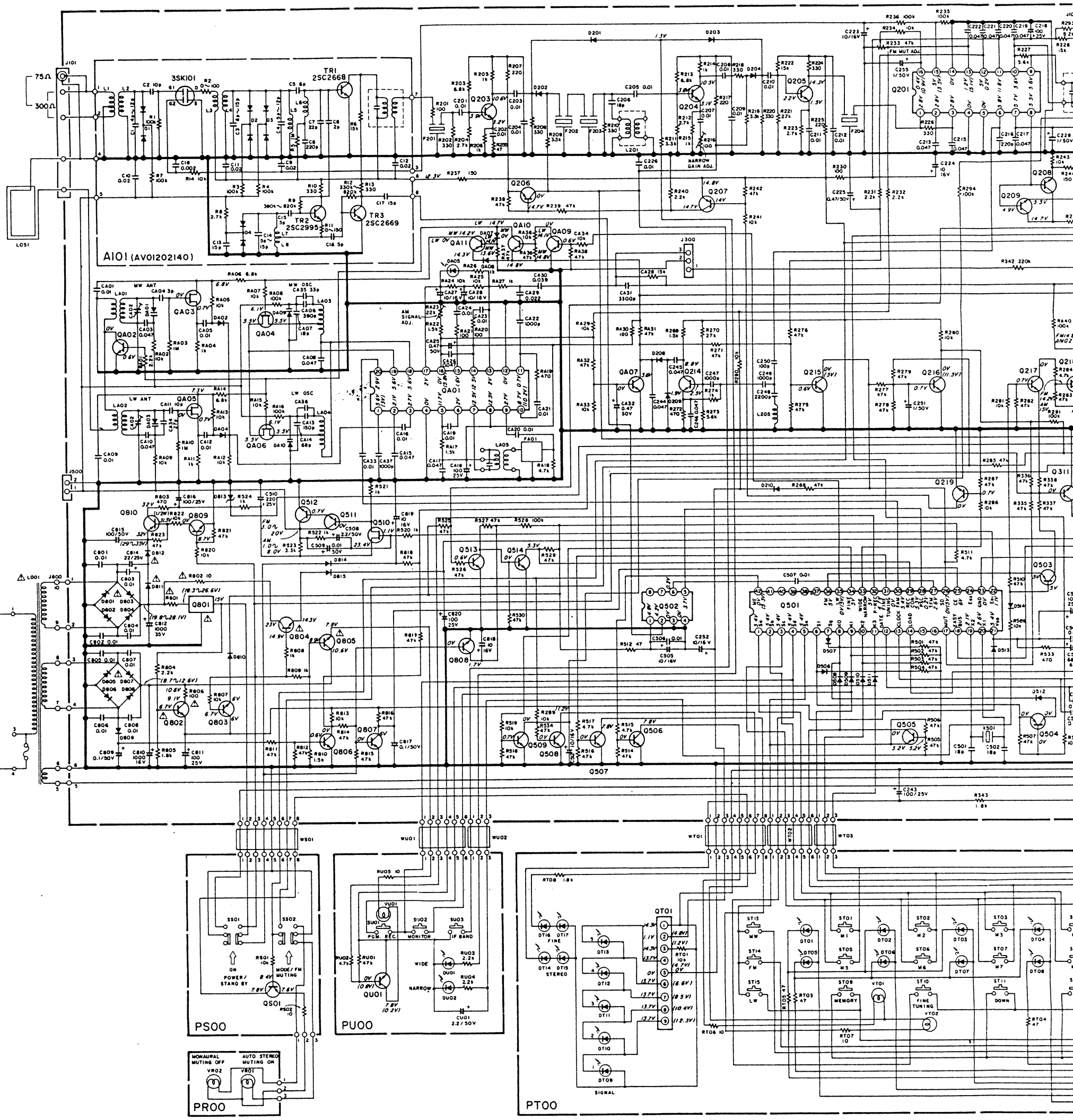
DA01
HD40006030
SVC321SP

D813
HD30015020
MA1240

Q203～Q205, Q208～Q211
HT31047IC0
2SC1047C

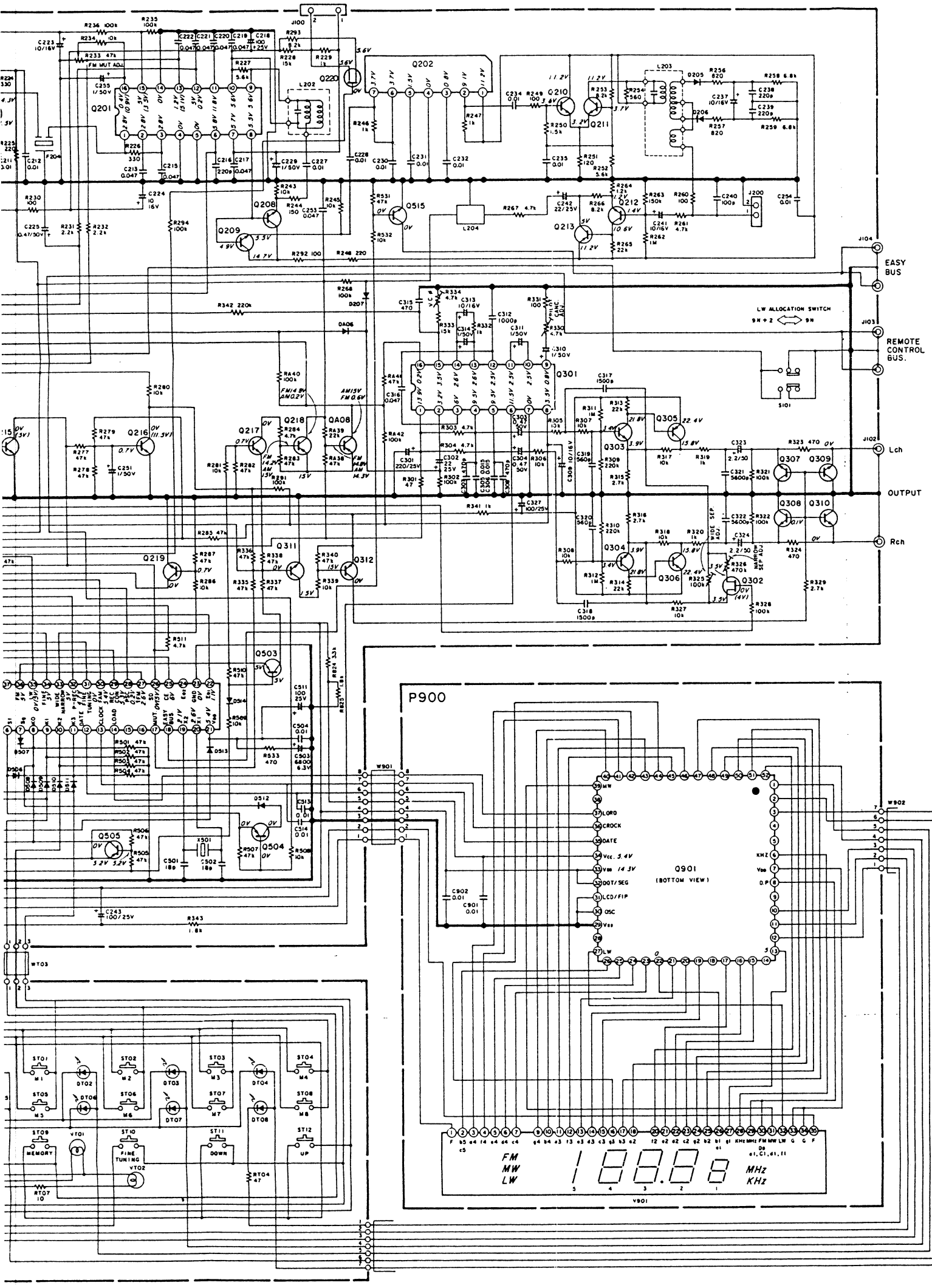


Components and wiring are subject to change for modification without notice.



NOTE ON SAFETY :
Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

Model ST-64L



Q0A01
HC10058030
LA1245

Q0T01
HC10062020
AN6876

Q0201
HC10028030
LA1231

Q0202
HC10017060
μPC1163H

Q0301
HC10001420
KB4437

Q0501
HC10103060
μPC1704C-552

Q0502
HC10030060
μP8553AC

Q0801
HC10077030
L78M15

Q0901
HC10077060
μPD6320G

Q0A03, Q0A05
HF20055100
2SK55D

Q0A02
HT40655IE0
2SD655(E)

Q0A04, Q0A06, Q0302, Q0510
Q0220 HF20030080
2SK30A (Y1)

Q0A07, Q0S01, Q0U01, Q0212
Q0214～Q0217, Q0219, Q0303
Q0304, Q0307～Q0311, Q0506
Q0507～Q0509, Q0511～Q0515
Q0803, Q0806～Q0809, Q0A09
HT3I7402F0
2SCI740S (R or S)

Q0A08, Q0A10, Q0A11, Q0206
Q0207, Q0213, Q0218, Q0305
Q0306, Q0312, Q0503, Q0504
Q0505, Q0810
HT10933280
2SA933SP (R or S)

Q0802, Q0804
HT40863180
2SD863 (E)

Q0805
HT40985280
2SD985(L,K)

D0A02, D0A04, D0A06, D0A07
D0A08, D0201, D0202, D0203
D0204, D0205, D0206, D0207
D0208, D0209, D0210, D0501
D0502, D0503, D0504, D0505
D0506, D0507, D0508,
D0510, D0511, D0512, D0513
D0514, D0515, D0516,
D0810, D0814
HD20001000
IS1555, IS2473, DS448
MA150, ETC.

D0T01～D0T08
HI10038030
SLP-981C-50

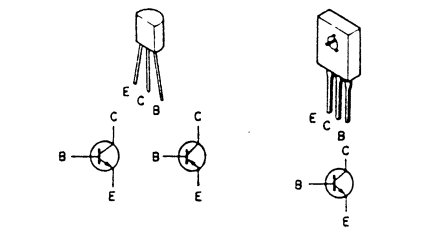
D0T09～D0T17, D0U01, D0U02
D0A05
HI10044320
GL-9PR26

D0801～D0809, D0811, D0812
HD20022030
DSF10C

D0A01, D0A03, D0A09, D0A10
HD40006030
SVC321SP

D0813
HD30015020
MA1240

Q0203～Q0205, Q0208～Q0211
HT3I047IC0
2SC1047C



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